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SELF ASSESSMENT MODEL PAPERS

Expected Questions for Coming Exams. with Explanatory Answers

Interview & Viva Voce

Instructions for Computerized Answer Sheet

1. First of all, the roll number and your first name have to be filled out. You must write your name and roll number in block letters.
2. Every question contains four or five choices in the form of A, B, C, D, and E. Only one out of them is correct. Your answer sheet has five boxes A B C D and E for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

What is the total area of the world?

(A) 408.6 million sq. km (B) **510.1 million sq km^2** ✓
(C) 728.5 million sq. km (D) 948.9 million sq. km

The correct answer is B, so shade the answer in this manner.

A	**B**	C	D

Instructions for MCQ Answer Sheet

INSTRUCTIONS FOR CANDIDATES FOR FILLING COMPUTERISED OMR ANSWER SHEET

The following instructions deal with the Computerized Multiple Choice Question (MCQ) answer sheet provided separately. These sheets are graded by a computer, therefore, it is very important that the candidates read and understand these instructions thoroughly before coming for the test. Non-compliance may lead to improper result.

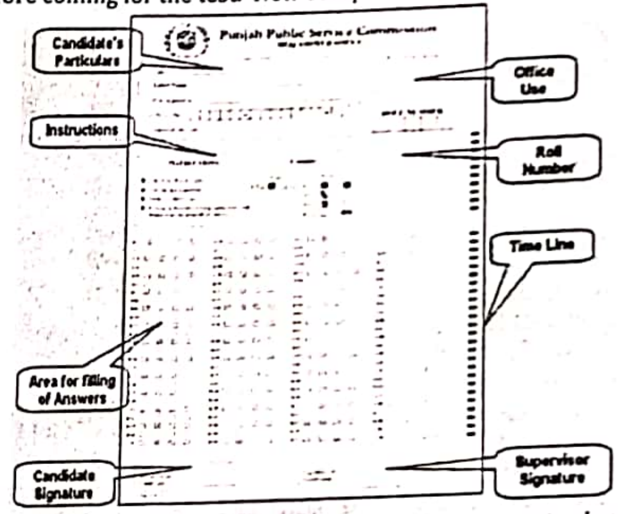


Fig.01 MCQ Answer Sheet: **Fig.01 is showing the new Computerized MCQ Answer Sheet that will be used for MCQ Type papers held by the PPSC.**

MCQ Answer Sheet consist of 8 different sections

- Candidate Particulars
- MCQ Answer Choices(1 to 100)
- Office Use
- Time Line
- Instructions
- Signature of Candidate
- Roll Number Filling Section
- Signature of Supervisor

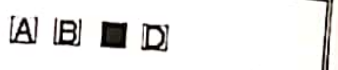
1. CANDIDATE PARTICULARS: In this Section candidate will write name, father name, Post Applied for, CNIC and Examination Centre

2. INSTRUCTIONS: In this Section instructions are given for the candidate for filling the the answer choices box with examples.

3. MCQ ANSWER CHOICES (1 TO 100): There are a Total of 100 questions. Each question has four choices from which candidate have to select the most appropriate answer. In some questions, there may not be an exact answer. In such cases select an answer which is most nearly correct. Against each question one line of options from A - D is given.

Mark choice by filling in the appropriate Box of the line (A to D) completely, making it **dark with Blue or Black marker** as shown below.

Question 1. Which is the capital of Pakistan?
A. Lahore B. Karachi C. Islamabad D. Peshawar

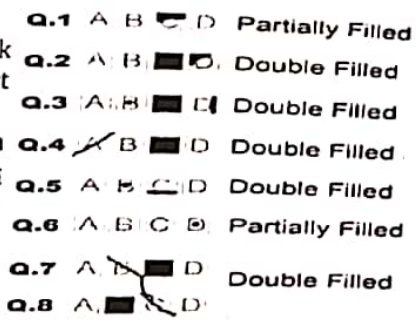
Answer: The correct answer is Islamabad i.e. C. Hence the box C should be filled in line opposite Q.1 on the answer sheet.	Q.1	

Wrong Filling Remarks

The grading computer will mark improperly filled boxes as incorrect answers.

Computer will also mark boxes with <u>stray marks</u> or <u>partially filled</u> or <u>boxes filled more than once</u>, as invalid answer.

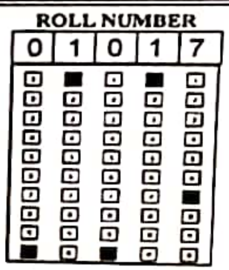
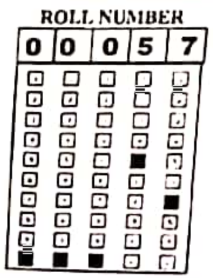
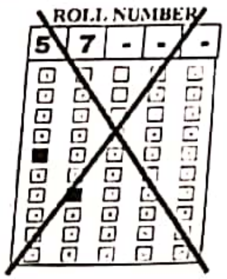
Examples



<u>4. Signature of Candidate:</u> In this Section candidate will affix signature in the signature box only. Signatures going out of Signature box may reject answer sheet to process through grading machine.

<u>5. Office Use :</u> This Section is for office Use only. Candidate should not write any thing in this area.

<u>6. Roll Number FILLING SECTION:</u> In this section candidate will write Roll Number. The proper way of writing Roll No. is as under. *Roll No. Filling Examples*

Roll Number 1017	Roll Number 57	Wrong Filling of Roll Number
		

<u>7. TIME LINE:</u> This Section is computer graded area. Writing any thing in this area may reject answer sheet to process through grading machine.

<u>8. SIGNATURE OF SUPERVISOR:</u> In this section supervisor will affix signature in the signature box.

How to Solve Multiple Choice Questions (MCQs) Correctly:

The following mentioned are the few multiple choice test tricks and strategies on how to pass a multiple choice test without studying.

1. Deterring conventional wisdom: Many individuals who take up objective type questions have the habit of guessing the middle option as the answer if they do not know. They also avoid answers which show none, all, always and never. This conventional wisdom will never help throughout the exam and so ignoring conventional wisdom is vital for answering a multiple choice answer.

2. Abolishing incorrect ones: For answering a multiple choice question, it is a fact that the multiple options are formatted in a tough manner. All the options seems to be right in some aspect and so the test taker can pick out the wrong answers first and then choose the right answer.

3. True or false test: Read the question carefully and if you're muddled by looking at the options, give each option a true or false test. Cross out the false answers and by this way the most appropriate answer can be found out.

4. Handling all of the above: In a multiple choice question when there is an option as "all of the above" be careful in answering such type of question. Check to see if more than two options are right, if so the choice can be opted.

5. Check the sentence: When your question ends with 'a', 'an' or 'the', then the answer should start appropriate to the article and hence correct answer can be chosen appropriately. Though this does not stand true for all questions, but can help for few which has articles in it . Few questions in English can be handled this way for picking the right option.

6. Longest options: In the midst of many questions when you find options with variable size of answers, pick the longest answer. It is a fact that the question designers cannot format very short answers.

7. Patterns and similarities: When there are options with many variables and so, look out for the options and its patterns and similarities. Pick choices which have the same patterns and leave out the outliners so that the nearest or right answer is picked.

8. Middle order: The middle order option is something which should be chosen, for example if the options are 100,150, 200, and 250 then choosing 150 or 200 can be the right choice. In such cases mostly, right answers are lesser than the maximum and higher than the lowest.

9. First impression: Always remember that the first impression is the best one. Once you have read the question, pick the right answer immediately. As you keep on reading the options there is a chance to choose the wrong option.

10. Chary (Careful, Cautious) reading and understanding: Test takers should make sure to read the question carefully though it is a timed test. Many individuals waste time without reading the question, hence it is important to read the question carefully and understand what is required.

11. Practicing: Practising well for exam is one way to score maximum. Past test papers, practice exams or study guides can give you an idea on how to answer MCQs.

12. Planning time: In order to use time appropriately, answer the questions for which you know the answers. For ones which you have a doubt, leave the doubtful question and skip over, at the end again read out the questions which you have not answered and complete the question paper. By this way your confidence is elevated and you also find more time for hard questions.

13. Focusing on keywords: The keywords in the question are to be identified and underlined which helps to narrow down the meaning. By this way the right option will match each and every part of the stem of the question. For the same paying attention to qualifiers, superlatives, negatives are important.

14. Pick the answer first: Once the question is read, formulate the answer in your mind rather than looking into the options. Once you have formulated the answers, look into the options

and you can find the answer you formed.

15. Trust instincts: You may have opted for first option based on your first impression, you can also change the answer if you think another response is right. A concrete reasoning is mandatory to make any changes and not just feeling.

16. Number games never work all the time: Playing the odd doesn't work out all the time and so playing with such type of methods can be avoided. Guess work and game play with multiple type questions can be avoided as they do not work well all the time.

17. Learn from mistakes: It is always a good idea to learn from your mistakes. Once the paper is returned back to you, review the answers and find out the reason for the mistakes taken place. Reason out if it is the question pattern or study material which has made you to pick an incorrect answer. By this way mistakes in future can be avoided.

18. Answers hid in questions: A complete reading of the question paper is one way to find out few answers, this is because for some questions answers are found in the question itself. The questions may have a link and answers within it too.

19. Eliminate grammatically wrong answers: It is a good way to eliminate grammatically wrong answers in a multiple choice question. The answers would never make sense and hence grammatically wrong answers can be avoided.

20. Opposites can be the right answer: In a multiple choice paper, if two options are complete opposites then there is a chance that one of them might be the answer. It is actually a trick used by the professors to check the knowledge of the students in the subject.

21. Single word in many options: There are many questions where one word appears in more than one options. The answer must be one of those choices which have the same word. In this context eliminate the odd one and choose from the similar options.

22. Unrelated answers: Once the question is read the options would have answers related to the question, if there are answers which are unrelated to the question then they can be eliminated as wrong answer.

23. Proper preparation: It is true that multiple choice questions concentrate on minute details in the subject which cannot be retained in mind effectively. Preparing at an early stage is what a multiple choice exam requires. Frequent review and early preparations are ways to hack the multiple choice exercises instead of tricks and guess work.

24. Schduling: It is mandatory for intense preparation for any multiple choice paper, it would be advisable to pay attention to terms and concepts, observations, ideas and lot more. These tips are important as this would be the ones which most commonly appear in the exams. You can also make lists and tables of important ideas or events which makes learning easier.

25. Do not guess all the time: Almost all students guess most of the time for a multiple choice answers but guessing would not be apt for negative marking questions. Avoid guess work for negative marking questions as they may lower your final total.

Conclusion: These are a few hints which can be followed for answering multiple choice questionnaire, but these tips are not complete100% true to yield successful results. These are a few tricks to handle the questions. They work for some situations but not completely for all exams, all time and all scenarios. Prio preparations and training are mandatory aspects for any multiple choice exams. The skill to tackle a multiple choice test paper is mandatory and hence good preparation on the subject along with these techniques is required to win over such exams. Test takers and students can run through these tips with proper preparation and hack their multiple choice exams in the right manner rather than believing in guess work.

ORIGINAL MODEL PAPER-2020

Paper Code A

PUBLIC SERVICE COMMISSION

ROLL NO.

Time Allowed: Two Hours   Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper & Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

Original Model Paper

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

Subject Based Questions: 80%

1. **Astrophysics is a branch of physics, which deals with :**
   (a) Light and sound (b) Sub-atomic particles
   (c) Stars and galaxies (d) Matter
2. **Unit of solid angle is called :**
   (a) Angstrom (b) Steradian
   (c) Radian (d) Degree
3. **Which one of the following is not a base unit :**
   (a) Watt (b) Candela
   (c) Kelvin (d) Ampere
4. **For addition and subtraction purposes, absolute uncertainties are :**
   (a) Divided (b) Added
   (c) Subtracted (d) Multiplied
5. **The dimension of kinetic energy is :**
   (a) Different from that of energy (b) Same as that of potential energy
   (c) [MLT] (d) None of these
6. **Choose the set of physical quantities, which have both numerical and directional properties :**
   (a) Acceleration, weight (b) Distance, force

(c) Speed, acceleration (d) Velocity, mass

7. A unit vector is generally represented by :
(a) A (b) $\overline{A}$
(c) $\hat{A}$ (d) A°

8. When two equal and opposite vectors are added, then their resultant will have :
(a) Double magnitude (b) Half magnitude
(c) Same magnitude (d) Zero magnitude

9. Which one of these quantities is not obtained by the scalar product of two vectors :
(a) Power (b) Pressure
(c) Work (d) Energy

10. Torque is counterpart of ________ for rotational motion.
(a) Inertia (b) Moment arm
(c) Mass (d) Force

11. Slope of velocity-time graph represents :
(a) Work (b) Torque
(c) Acceleration (d) Speed

12. The decrease in velocity per unit time is called :
(a) Average acceleration (b) Retardation
(c) Negative acceleration (d) Variable acceleration

13. Motion of a body along Y-axis is :
(a) Four dimensions (b) Three dimensions
(c) Two dimensions (d) One dimension

14. Change in momentum in one second is called :
(a) Impulse (b) Work
(c) Force (d) Energy

15. A shell projected at an angle of 45° with the horizontal, achieves maximum :
(a) Velocity (b) Range
(c) Height (d) Acceleration

16. Work done is maximum when angle between force and displacement is :
(a) 180° (b) 90°
(c) 45° (d) 0°

17. When a wall is pushed by a person very strongly, he has done :
(a) Zero work (b) Negative work
(c) Positive work (d) Maximum work

18. Escape velocity from surface of moon as compared to that from Earth surface is :
(a) Equal (b) Much smaller
(c) Smaller (d) Greater

19. Energy possessed by a body due to its position is called :
(a) Potential energy (b) Heat energy
(c) Magnetic energy (d) Kinetic energy

20. The tidal energy is produced due to rotation of Earth relative to :
(a) Water (b) Oceans
(c) Sun (d) Moon

21. An axis of rotation :
(a) Passes through pivot point O (b) Is normal to the plane of rotation
(c) Is a straight line (d) All of these

22. The useful unit of angular displacement in SI unit is :
(a) Radian (b) Metre
(c) Revolution (d) Degree

23. The point where the total mass of an irregular-shaped body is assumed to act is called :
(a) Centre of mass (b) Centre of the sun
(c) Centre of earth (d) Optical center

24. As the wheel rolls, it has :
(a) Translational K.E (b) Rotational K.E
(c) Both A and B (d) Vibrational energy

25. Geodesics in curved space-time are equivalent to ________ in plane geometry.
(a) Straight lines (b) Circular lines
(c) Zig-zag lines (d) None of these

26. Glycerin has viscosity ________ the viscosity of water.
(a) Less than (b) Much less than
(c) Equal to (d) More than

27. The irregular or unsteady flow of the fluid is called :
(a) Streamline flow (b) Laminar flow
(c) Turbulent flow (d) Both A and B

28. The action of perfume bottles :
(a) Viscosity (b) Bernoulli's theorem
(c) Equation of continuity (d) Surface tension

29. Normally, the pressure of blood inside the walls is ________ the external atmospheric pressure.
(a) Greater than (b) Smaller than
(c) Equal to (d) None of these

30. Chest piece and ear-piece are the parts of :
(a) X-ray plant (b) Stethoscope
(c) Sphygmomanometer (d) An ultra-sound machine

31. The unit of spring constant is :
(a) Nm^{-1} (b) J-sec
(c) Metre (d) Kelvin

32. In SHM, there is always a constant ratio between displacement of a body and its :
(a) Period (b) Mass
(c) Acceleration (d) Velocity

33. In case of spring-mass system, the ratio of the applied force to the displacement is called :
(a) Acceleration (b) Spring constant
(c) Decay constant (d) Planck's constant

34. The time period of a simple pendulum does not depend upon :
(a) Mass (b) Amplitude
(c) Both A and B (d) Length

35. A physical system under forced vibrations is known as :
(a) Forced harmonic oscillator (b) Driven harmonic oscillator
(c) Both A and B (d) Damped harmonic oscillator

36. Longitudinal waves are also called :
(a) Microwaves (b) Radio waves
(c) Transverse waves (d) Compressional waves

37. In space, sound waves cannot travel because there is :
(a) Vacuum (b) Air
(c) Gravity (d) Light

38. Principle of superposition of waves uses the property of _____ for displacements of waves.
(a) Division (b) Multiplication
(c) Addition (d) Subtraction

39. A supersonic plane flies with the speed ________ speed of sound.

(a) Greater than (b) Less than
(c) Much less than (d) Equal to

40. The wavelength of spectral lines of distant star appears to have shifted towards higher wavelength. Then the star is :
(a) Moving towards the observer (b) Disappeared
(c) Constant (d) Moving away from the observer

41. Light waves are :
(a) Longitudinal waves (b) Transverse waves
(c) Similar to sound waves (d) Compressional waves

42. The appearance of colours in the soap (or oil) film results from :
(a) Interference (b) Refraction
(c) Reflection (d) Dispersion

43. Conditions for interference are that the two sources should be coherent and :
(a) Close together (b) At 10 m distant from each other
(c) At a far-off distance (d) Coinciding

44. The spacing between lines of diffraction grating :
(a) Is transparent (b) Does not exist
(c) Is opaque (d) Is semi-transparent

45. The polarized light is ________ intense as compared to unpolarized light.
(a) Equally (b) Much less
(c) Less (d) More

46. With age, least distance of distinct vision :
(a) Is not affected (b) Decreases to zero
(c) Decreases (d) Increases

47. A magnifier gives an image which is :
(a) Virtual, erect (b) Real, inverted
(c) Real, erect (d) Virtual, inverted

48. The focal length of objective lens of microscope is ________ that of eye-piece.
(a) Less than (b) Equal to
(c) Much greater than (d) Greater than

49. The sides of eight-sided mirror are :
(a) Unpolished (b) Opaque
(c) Polished (d) Transparent

50. A ray of light passing from a denser to a rarer medium :
(a) Suffers no change in direction (b) Bends towards normal
(c) Reflects all around (d) Away from normal

51. A gas which strictly obeys the gas laws under all conditions of temperatures and pressure is called :
(a) Inert gas (b) Ideal gas
(c) The lightest gas (d) Real gas

52. Which of the following does not have the same units?
(a) Power (b) Kinetic energy
(c) Work (d) Heat

53. Change in momentum per second is :
(a) Ratio of area and pressure (b) Ratio of pressure and area
(c) Product of pressure and area (d) Product of force and time

54. The ratio of output work per cycle to input energy per cycle is called :
(a) Pressure (b) Efficiency
(c) Internal energy (d) Entropy

55. Disorder of system is a measure of :
(a) Pressure (b) Power
(c) Entropy (d) Energy

56. Capacitance of a capacitor depends upon :
(a) Medium between the plates (b) Separation between the plates
(c) Area of its plates (d) All of these

57. Most thermistors have temperature co-efficient having :
(a) Negative value (b) Zero value
(c) Positive value (d) Extreme value

58. The unit of magnetic flux density is :
(a) Tesla (b) Web m^{-2}
(c) Both A and B (d) Weber

59. The direction of induced current is always such as to oppose the cause which produces the current. This statement is :
(a) Lenz's law (b) Faraday's law
(c) Kirchhoff's second law (d) Kirchhoff's first law

60. In AC circuits, basic circuit elements are :
(a) R and L (b) Battery
(c) R and C (d) R, L and C

61. The study of Physics involves:
(a) Chemical changes (b) Structure of space and time
(c) Interaction of electromagnetic radiation with matter (d) Both B and C

62. The amount of a substance is measured in:
(a) Mole (b) Kilogram
(c) Both A and B (d) Litre

63. A dimension stands for the ______ nature of certain physical quantity.
(a) Quantitative (b) Qualitative
(c) Super (d) Additive

64. $n\vec{A}$ has same direction as that of $\vec{A}$ when n is:
(a) Zero (b) Unchanged
(c) Negative (d) Positive

65. The sum of two or more vectors is equal to a single vector which is called:
(a) Resultant vector (b) Similar vector
(c) Component vector (d) Product vector

66. The tail end of a vector represented graphically is considered as:
(a) Initial point (b) Zero point
(c) Closing point (d) End point

67. The shortest distance between two points directed from its initial point to final point is called:
(a) Distance (b) Speed
(c) Velocity (d) Displacement

68. The time rate of change of displacement is called:
(a) Velocity (b) Acceleration
(c) Time (d) Speed

69. The term impulse is used when the force applied on a body is:
(a) Constant (b) Not constant
(c) Zero (d) Negative

70. The horizontal range of a projectile depends upon:
(a) Value of g (b) Initial velocity
(c) Angle of projection (d) All of these

71. Work has the dimensions as that of:
(a) Power (b) Torque
(c) Angular momentum (d) Linear momentum

72. Mechanical energy can be converted into:

(a) Electrical energy (b) Light energy
(c) Both A and B (d) Heat energy

73. The commercial unit of electrical energy is:
(a) KWh (b) Joule
(c) Horse power (d) K Watt

74. Centripetal force performs:
(a) Negative work (b) Maximum work
(c) Zero work (d) Positive work

75. Moment of linear momentum is called:
(a) Moment of inertia (b) Angular momentum
(c) Moment arm (d) Inertia

76. A non-inertial frame of reference is also called:
(a) Accelerated frame (b) A frame moving with constant velocity
(c) Non-accelerated frame (d) None of these

77. A body passing through a viscous medium is affected by:
(a) Four forces (b) Three forces
(c) Two forces (d) One force only

78. Unit of density to mass ratio is:
(a) $Kg\text{-}m^3$ (b) m^{-3}
(c) m^3 (d) $Kg\text{-}m^{-3}$

79. Blood vessels are________ and they stretch like a rubber hose.
(a) Not rigid (b) Rigid
(c) Very rigid (d) Soft

80. The SI unit of spring constant is identical with that of:
(a) Loudness (b) Pressure
(c) Surface tension (d) Force

ANSWERS

1.	C	2.	B	3.	A	4.	B	5.	B
6.	A	7.	C	8.	D	9.	B	10.	D
11.	C	12.	B	13.	D	14.	C	15.	B
16.	D	17.	A	18.	C	19.	A	20.	D
21.	D	22.	A	23.	A	24.	C	25.	A
26.	D	27.	C	28.	B	29.	A	30.	B
31.	A	32.	C	33.	B	34.	C	35.	C
36.	D	37.	A	38.	C	39.	A	40.	D
41.	B	42.	A	43.	A	44.	A	45.	C
46.	D	47.	A	48.	A	49.	C	50.	D
51.	B	52.	A	53.	C	54.	B	55.	C
56.	D	57.	A	58.	C	59.	A	60	B
61.	D	62.	C	63.	B	64.	D	65.	A
66.	A	67.	D	68.	A	69.	B	70.	D
71.	B	72.	C	73.	A	74.	C	75.	B
76.	A	77.	C	78.	B	79.	A	80.	C

General Ability Questions: 20%

80. **If 10 men can complete a work in 20 days, how long will it take 8 men to do the job if they work at the same rate?**
(A) 25 days✓ (B) 18 days (C) 20 days (D) 16 days

81. **The longest river of Australia is:**
(A) Mekong (B) Ob-Irtysh
(C) Oder (D) Darling✓

82. **Which country is called Land of Druk Yul?**
(A) New Zealand (B) Nepal✓
(C) Norway (D) Somalia

83. **The Indian Muslims observed 'Day of Deliverance' after the RESIGNATION of Congress Ministries on:**
(A) 12 September, 1939 (B) 22 September, 1939
(C) 12 December, 1939 (D) 22 December, 1939✓

84. **Chaudhri Rehmat Ali first used the word 'Pakistan' in his pamphlet 'Now or Never' in:**
(A) 1933✓ (B) 1935 (C) 1937 (D) 1938

85. **Pakistani Cricketer Yasir Shah has become the fastest bowler to reach 200 wickets in Test Cricket breaking Australi's record set 82 years ago?**
(A) Glenn McGrath (B) Mitchell Starc
(C) Clarrie Grimmett✓ (D) Nathan Lyon

86. **The virtual Summit of the Non Aligned Movement (NAM) on COVID-19 pandemic has been organised at the initiative of which country?**
(A) Kazakhstan (B) Uzbekistan
(C) Azerbaijan✓ (D) None of above

87. **According to a new UN report, which continent could see 300,000 COVID-19 deaths this year?**
(A) Asia (B) North America
(C) Africa✓ (D) Europe

88. **The Holy Prophet (PBUH) made hijrat from Makkah to Madinah in the year:**
(A) 610 A.D. (B) 622 A.D.✓ (C) 626 A.D. (D) 632 A.D.

89. **Name the smallest country in Asia:**
(A) Maldives ✓ (B) India
(C) China (D) Pakistan

90. **"Lake Titicaca" is located in:**
(A) Argentina (B) Bolivia
(C) Peru ✓ (D) None of these

91. **In one kilometer race, A beats B by 28 meters or 7 seconds. Find out the time taken by A to finish the race.**
(A) 4 mins 20 secs (B) 4 mins 3 secs✓ (C) 3 min 4 secs (D) 5 mins

92. **Imran made a profit of 20 percent in the first year. Next year, he had a loss of 25 percent on the capital he had at the beginning of second year. What was his overall loss?**
(A) No loss (B) 12 percent (C) 10 percent (D) 5 percent✓

93. **Eminent means:**
(A) Hardworking (B) Clever (C) Famous✓ (D) Ambitious

94. **Which word is wrongly spelt in the following set of words?**
(A) Gratitude (B) Confusion
(C) Priveous✓ (D) Companion

95. **Pakistan plans to send first Astronaut to space in?**
(A) 2020 (B) 2022✓ (C) 2026 (D) 2024

96. **Cytology is the:**
(A) Study of living cells✓ (B) Study of harmones
(C) Study of seeds (D) Study of surface tension

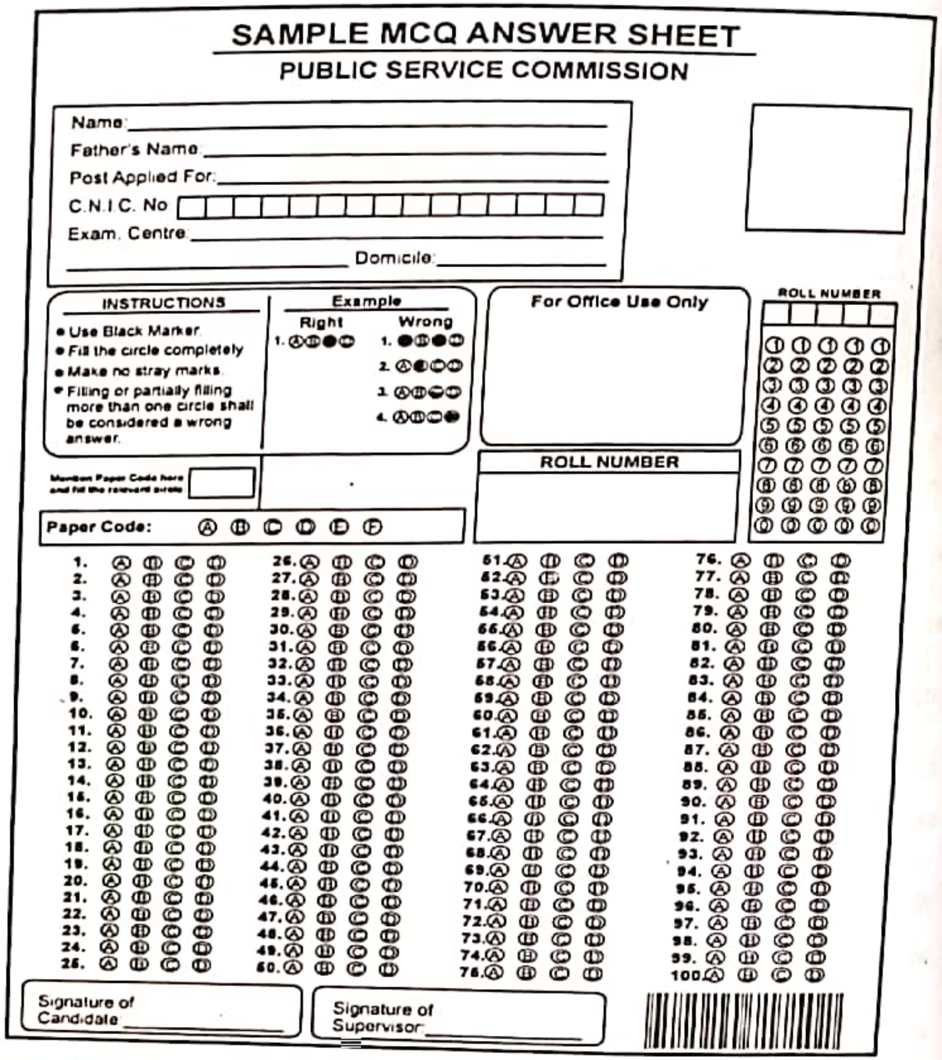
97. **What is the largest font size available in the font size tool on formatting toolbar?**

(A) 78 (B) 72✓ (C) 75 (D) 68

98. Selecting text means selecting _____.
(A) A word (B) An entire sentence
(C) Whole document✓ (D) None of these

99. مشہور نظم ''طلوع اسلام'' کے شاعر کون ہیں؟
(A) علامہ اقبال✓ (B) حفیظ جالندھری (C) مولانا ظفر علی خان
(D) الطاف حسین حالی

100. مندرجہ ذیل الفاظ قواعد کی رو سے کیا ہیں؟
پنکھڑی، پہاڑی، ٹوکری
(A) اسم مفعول (B) اسم ظرف (C) اسم تصغیر✓ (D) اسم مکبر



SAMPLE MCQ ANSWER SHEET
PUBLIC SERVICE COMMISSION

Name: ______
Father's Name: ______
Post Applied For: ______
C.N.I.C. No ______
Exam. Centre: ______ Domicile: ______

INSTRUCTIONS
- Use Black Marker.
- Fill the circle completely
- Make no stray marks.
- Filling or partially filling more than one circle shall be considered a wrong answer.

Example Right / Wrong

For Office Use Only

ROLL NUMBER

Mention Paper Code here and fill the relevant circle

Paper Code: Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ

1. Ⓐ Ⓑ Ⓒ Ⓓ	26. Ⓐ Ⓑ Ⓒ Ⓓ	51. Ⓐ Ⓑ Ⓒ Ⓓ	76. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ	27. Ⓐ Ⓑ Ⓒ Ⓓ	52. Ⓐ Ⓑ Ⓒ Ⓓ	77. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ	28. Ⓐ Ⓑ Ⓒ Ⓓ	53. Ⓐ Ⓑ Ⓒ Ⓓ	78. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ	29. Ⓐ Ⓑ Ⓒ Ⓓ	54. Ⓐ Ⓑ Ⓒ Ⓓ	79. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ	30. Ⓐ Ⓑ Ⓒ Ⓓ	55. Ⓐ Ⓑ Ⓒ Ⓓ	80. Ⓐ Ⓑ Ⓒ Ⓓ
6. Ⓐ Ⓑ Ⓒ Ⓓ	31. Ⓐ Ⓑ Ⓒ Ⓓ	56. Ⓐ Ⓑ Ⓒ Ⓓ	81. Ⓐ Ⓑ Ⓒ Ⓓ
7. Ⓐ Ⓑ Ⓒ Ⓓ	32. Ⓐ Ⓑ Ⓒ Ⓓ	57. Ⓐ Ⓑ Ⓒ Ⓓ	82. Ⓐ Ⓑ Ⓒ Ⓓ
8. Ⓐ Ⓑ Ⓒ Ⓓ	33. Ⓐ Ⓑ Ⓒ Ⓓ	58. Ⓐ Ⓑ Ⓒ Ⓓ	83. Ⓐ Ⓑ Ⓒ Ⓓ
9. Ⓐ Ⓑ Ⓒ Ⓓ	34. Ⓐ Ⓑ Ⓒ Ⓓ	59. Ⓐ Ⓑ Ⓒ Ⓓ	84. Ⓐ Ⓑ Ⓒ Ⓓ
10. Ⓐ Ⓑ Ⓒ Ⓓ	35. Ⓐ Ⓑ Ⓒ Ⓓ	60. Ⓐ Ⓑ Ⓒ Ⓓ	85. Ⓐ Ⓑ Ⓒ Ⓓ
11. Ⓐ Ⓑ Ⓒ Ⓓ	36. Ⓐ Ⓑ Ⓒ Ⓓ	61. Ⓐ Ⓑ Ⓒ Ⓓ	86. Ⓐ Ⓑ Ⓒ Ⓓ
12. Ⓐ Ⓑ Ⓒ Ⓓ	37. Ⓐ Ⓑ Ⓒ Ⓓ	62. Ⓐ Ⓑ Ⓒ Ⓓ	87. Ⓐ Ⓑ Ⓒ Ⓓ
13. Ⓐ Ⓑ Ⓒ Ⓓ	38. Ⓐ Ⓑ Ⓒ Ⓓ	63. Ⓐ Ⓑ Ⓒ Ⓓ	88. Ⓐ Ⓑ Ⓒ Ⓓ
14. Ⓐ Ⓑ Ⓒ Ⓓ	39. Ⓐ Ⓑ Ⓒ Ⓓ	64. Ⓐ Ⓑ Ⓒ Ⓓ	89. Ⓐ Ⓑ Ⓒ Ⓓ
15. Ⓐ Ⓑ Ⓒ Ⓓ	40. Ⓐ Ⓑ Ⓒ Ⓓ	65. Ⓐ Ⓑ Ⓒ Ⓓ	90. Ⓐ Ⓑ Ⓒ Ⓓ
16. Ⓐ Ⓑ Ⓒ Ⓓ	41. Ⓐ Ⓑ Ⓒ Ⓓ	66. Ⓐ Ⓑ Ⓒ Ⓓ	91. Ⓐ Ⓑ Ⓒ Ⓓ
17. Ⓐ Ⓑ Ⓒ Ⓓ	42. Ⓐ Ⓑ Ⓒ Ⓓ	67. Ⓐ Ⓑ Ⓒ Ⓓ	92. Ⓐ Ⓑ Ⓒ Ⓓ
18. Ⓐ Ⓑ Ⓒ Ⓓ	43. Ⓐ Ⓑ Ⓒ Ⓓ	68. Ⓐ Ⓑ Ⓒ Ⓓ	93. Ⓐ Ⓑ Ⓒ Ⓓ
19. Ⓐ Ⓑ Ⓒ Ⓓ	44. Ⓐ Ⓑ Ⓒ Ⓓ	69. Ⓐ Ⓑ Ⓒ Ⓓ	94. Ⓐ Ⓑ Ⓒ Ⓓ
20. Ⓐ Ⓑ Ⓒ Ⓓ	45. Ⓐ Ⓑ Ⓒ Ⓓ	70. Ⓐ Ⓑ Ⓒ Ⓓ	95. Ⓐ Ⓑ Ⓒ Ⓓ
21. Ⓐ Ⓑ Ⓒ Ⓓ	46. Ⓐ Ⓑ Ⓒ Ⓓ	71. Ⓐ Ⓑ Ⓒ Ⓓ	96. Ⓐ Ⓑ Ⓒ Ⓓ
22. Ⓐ Ⓑ Ⓒ Ⓓ	47. Ⓐ Ⓑ Ⓒ Ⓓ	72. Ⓐ Ⓑ Ⓒ Ⓓ	97. Ⓐ Ⓑ Ⓒ Ⓓ
23. Ⓐ Ⓑ Ⓒ Ⓓ	48. Ⓐ Ⓑ Ⓒ Ⓓ	73. Ⓐ Ⓑ Ⓒ Ⓓ	98. Ⓐ Ⓑ Ⓒ Ⓓ
24. Ⓐ Ⓑ Ⓒ Ⓓ	49. Ⓐ Ⓑ Ⓒ Ⓓ	74. Ⓐ Ⓑ Ⓒ Ⓓ	99. Ⓐ Ⓑ Ⓒ Ⓓ
25. Ⓐ Ⓑ Ⓒ Ⓓ	50. Ⓐ Ⓑ Ⓒ Ⓓ	75. Ⓐ Ⓑ Ⓒ Ⓓ	100. Ⓐ Ⓑ Ⓒ Ⓓ

Signature of Candidate ______ Signature of Supervisor ______

ORIGINAL MODEL PAPERS
FOR THE POST OF LECTURER PHYSICS

QUESTIONS BASED ON PREVIOUS PUBLIC SERVICE COMMISSIONS LECTRUER/SUBJECT SPECIALIST PAPERS (2002-2019)

Paper Code A	PUBLIC SERVICE COMMISSION	ROLL NO.

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question carries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**

(A) Pakistan (B) Russia (C) China (D) US

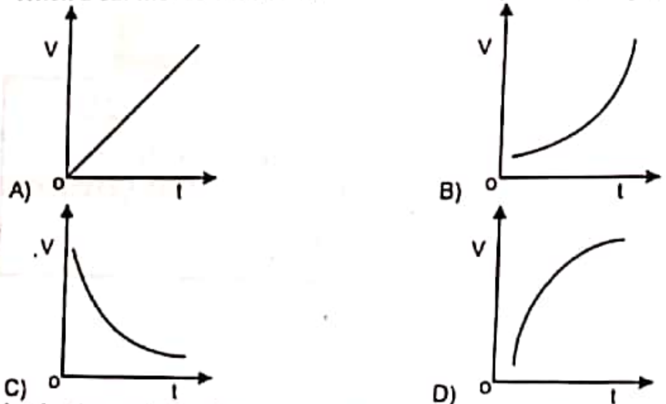
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-1

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

☛ **When a car moves with constant acceleration, the velocity-time graph is a:**



2. **In elastic collision, when a massive body collides with light body at conditions m1 >> m2 and v2 = 0 ms^{-1}, then the change in velocity will be written as:**

A) $v_1' = -v_1$; $v_2' = v_1$ C) $v_1' = v_1$; $v_2' = 2v_1$✓
B) $v_1' = v_1$; $v2' = 0$ D) $v_1' = -v_1$; $v_2' = 0$

3. **If a certain force acts on an object and changes its kinetic energy from 65 J to 130 J, then work done by the force will be:**
A) 92.5 J C) 65 J✓
B) 97.5 J D) 130 J

4. **A bullet train is lifted above the rails due to magnetic effect, thus friction is reduced to minimum and speed can be enhanced up to:**
A) 500 Km min^{-1} C) 1000 Km h^{-1}
B) 500 Km sec^{-1} D) 500 Km h^{-1}✓

5. **In a certain circuit, if the transistor has a collector current of 10 mA and base current of 50 μA, then the current gain of the transistor is:**
A) 250 C) 150
B) 100 D) 200✓

☛ **A signal that is applied at the inverting input terminal of an op-amplifier undergo amplification, at the output terminal with a phase shift of:**
A) 0° C) 360°
B) 270° D) 180°✓

7. **Solar energy at normal incidence outside the earth's atmosphere is about:**
A) 2.5 kWm^{-2} C) 1.4 kWm^{-2}✓
B) 0.6 kWm^{-2} D) 2.0 kWm^{-2}

8. **Linear velocity or tangential velocity of any particle moving in a circular path of radius 2 m with angular velocity 8 $rads^{-1}$ will be:**
A) 16 ms^{-1}✓ C) 10 ms^{-1}
B) 4 ms^{-1} D) 6 ms^{-1}

☛ **What is torque 'τ' in a circular motion?**
A) $\tau = mr^2\alpha$✓ C) $\tau = mr\alpha$
B) $\tau = mr^2a$ D) $\tau = mr^2/\alpha$

10. **If the mass attached with a spring becomes four times, the time period of vibration becomes:**
A) One fourth C) Half
B) 3/4 D) Double✓

11. **When a helium atom loses an electron, it becomes:**
A) An alpha particle C) A positive helium ion.✓
B) Proton. D) A negative helium ion.

12. **Beta ray emitted by a radioactive substance is:**
A) An electron which was existing outside the nucleus.
B) An electron which was existing inside the nucleus.✓
C) An electron emitted by the nucleus as a result of the decay of neutron inside the nucleus.
D) A pulse of electromagnetic wave.

☛ **An electric charge in uniform motion produces:**
A) An electric field.
B) Both magnetic and electric fields.✓
C) A magnetic field. D) Neither magnetic nor electric fields.

14. **What is emitted by a hot metal filament in a cathode ray tube?**
A) X-ray. C) Electron.✓

B) Proton. D) Photon.

15. **If the mass of the bob of a pendulum is doubled its time period is:**
A) Halved. C) **Unchanged.✓**
B) Doubled. D) Increases four times.

16. **The centre of Newton rings is dark due to:**
A) Polarization. C) Constructive interference.
B) Destructive interference. ✓ D) Reflection.

☞ **Which one is most stable element on the basis of binding energy?**
A) Sn. C) Kr.
B) Ba. **D) Fe.✓**

18. **Resistance in RC circuit of time constant 2 seconds is 1000 Ohms. What is value of C in the circuit?**
A) 2 μ farad. C) 200 μ farad.
B) 20 μ farad.✓ D) 2000 μ farad

19. **The Lenz's law refers to induced __________**
A) emf. C) Shear.
B) Resistance. **D) Currents.✓**

☞ **In which of the following, output is similar to NAND gate if input A=0 and input B=1.**
A) NOR. **C) XOR.✓**
B) XNOR. D) Both B and C.

21. **Which one is the highest power multiple?**
A) Giga C) Mega
B) Tera✓ D) Deca

22. **SI unit of charge is _______.**
A) Ampere✓ C) Coulomb
B) Volt D) Calorie

23. **The electrical analog of mass is electricity is ________.**
A) Capacitance **C) Charge✓**
B) Inductance D) Resistance

24. **Which one of the following relations is correct?**
A) 1 wb m^{-2} = N m^{-1} A^{-1} C) 1 wb m^{-2} = 1 Tesla
B) 1 Tesla = 10^{4} Gausses **D) All of these✓**

☞ **Life time of electron in metastable state is about ________.**
A) 10^{-5} sec **C) 10^{-3} sec✓**
B) 10^{-3} sec D) 10^{-2} sec

26. **The torque acting on a current carrying coil is given by ____________.**
A) τ = NIAB cos α✓ C) τ = NIAB sin α
B) τ = BIL sin α D) τ = BIL cos α

27. **The grid in the cathode ray oscilloscope ___________.**
A) Controls number of waves
B) Controls the brightness of spot formed✓
C) Accelerates electrons
D) Has positive potential with respect to cathode

28. **The horizontal range of a projectile, at a certain place, is completely determined by**
A) The angle of projection✓ C) The mass of the projectile
B) The initial velocity of projection D) Speed and mass of the projectile

☞ **If velocity is double, then.**
A) Momentum increase 4 times and K.E increases 2 times
B) Momentum and K.E remain same
C) Momentum increases 2 times and K.E increase constant
D) Momentum increases 2 times and K.E increases 4 times✓

30. **The consumption of energy by 60-watt bulb in 2 seconds is:**
A) 20 J C) 30 J
B) 120 J✓ D) 0.02 J

31. **For atomic hydrogen spectrum, which of the following series lies in visible region of electromagnetic spectrum?**
A) Lyman series. **C) Balmer series.✓**
B) Paschen series. D) Bohr series.

32. **__________ are the particles that experience strong nuclear force.**
A) Electrons. C) Neutrinos.
B) Muons. **D) Neutrons.✓**

☞ **The vertical velocity of ball thrown upward __________ with time.**
A) Decreases linearly. **C) Doubles.✓**
B) Remains constant. D) Decreases parabolically.

34. **The force required to bend the normally straight path of a particle into a circular path is called __________ force.**
A) Traveling. C) Centrifugal.
B) Bending. **D) Centripetal.✓**

35. **A disc at rest without slipping, rolls down a hill of height (3 x 9.8) m. What is its speed in m/sec when it reaches at the bottom?**
A) 11.4. ✓ C) 22.8.
B) 19.6. D) 9.8.

☞ **Tuning of the radio is the best example of electrical __________**
A) Resonance. ✓ C) Current.
B) Resistance. D) None of these.

37. **A standing wave pattern is formed when the length of string is an integral multiple of __________ wavelength.**
A) Triple. **C) Half.✓**
B) Full. D) Double.

38. **Which of the following lights travels the fastest in optical fibres?**
A) Visible light. C) Ultra-violet.
B) Invisible Infra-red.✓ D) Ordinary light.

39. **The algebraic sum of potential changes in a closed circuit is zero is Kirchhoff's __________ rule.**
A) First. C) Third.

B) Second.✓
D) None of these.

40. In LED when an electron combines with a ________ during forward bias conduction, a photon of visible light is emitted.
A) High voltage.
C) Hole.✓
B) Photon.
D) Positron.

41. For photons of energy greater than 1.02 MeV the probability of pair production occurrence ________ as the energy increases.
A) Increase.✓
C) Reduces to half.
B) Completely diminishes.
D) Remains unchanged.

The neutron is assumed to be made of
A) One up quark and two down quarks.✓
C) Two up quarks and one down quark.
B) Two up quarks and two down quarks.
D) One up quark and one down quark.

43. An ________ missile is called a ballistic missile.
A) Un-powered and guided.
C) Powered and guided.
B) Un-guided and powered.
D) Un-powered and un-guided.✓

Two cylinders of equal mass are made from same material. The one with the larger diameter accelerates ________ the other under the action of same torque.
A) Faster than.✓
C) Equal to.
B) Slower than.
D) None of these.

45. The angular frequency of simple pendulum is directly proportional to ________
A) l.
C) v l.
B) 1/l. D) v1/l.✓

46. Two waves of slightly different frequencies and traveling in same direction produce ________
A) Interference.
C) Stationary waves.
B) Polarization.
D) Beats.✓

47. A single mode step index fibre has core of about ________ μm diameter
A) 50 to 1000.
C) 30.
B) 50. D) 5.✓

48. A 5 Ohm resistor is indicated by a single ________ color band around its body.
A) Red.
C) Blue.
B) Green.✓
D) Brown.

Practically ________ current flows in a reverse biased p-n junction.
A) No.
C) Few milliamperes.
B) Very large.
D) Both A and C.✓

50. Cesium coated oxidized silver emits electrons for ________ light.
A) Infrared.✓
C) Visible.
B) Ultraviolet.
D) Green.

51. The cobalt is absorbed by
A) Bones.
C) Liver.✓
B) Skin.
D) Thyroid gland.

52. In a step-down transformer the output current ________
A) Is reduced.
C) Remains same.
B) Is increased.✓
D) None of these.

53. Force in terms of base units is expressed as
A) kg ms^{-2}.✓
C) kg m^2s^{-3}.
B) kg m^2s^{-2}.
D) None of these.

100 joules work has been done by an agency in 10 seconds. What is power of agency?
A) 1000 watt.
C) 10 watt.✓
B) 100.
D) 0.10 watt.

55. The acceleration is proportional to the displacement and is directed towards mean position in ________ motion.
A) Gravity.
C) Uniform.
B) Simple harmonic.✓
D) Projectile.

56. In gases, the speed of sound is inversely proportional to ________ of the density when other factors are same.
A) Square root.✓
C) Third power.
B) Square.
D) Third root.

57. A watch maker uses ________ to repair the watches.
A) Telescope.
C) Convex lens.✓
B) Convex mirror.
D) Concave lens.

A 2m long pipe is open at both ends. What is its harmonic frequency?
A) 42.5 Hz.
C) 220 Hz.
B) 85 Hz.✓
D) None of these.

59. A wire has resistance 100 Ohm at 0 °C and 200 Ohm at 100 °C. What is its temperature coefficient in K^{-1}?
A) -0.01.
C) 0.01.
B) -1/273.
D) 1/273.✓

60. The net magnetic field created by the electrons within an atom is due to the field created by their ________ motion.
A) Orbital.
C) Orbital & spin.
B) Spin.
D) Orbital x spin. ✓

At high temperature, the proportion of ________ wavelength radiation increase.
A) AM radio.
C) Shorter.
B) Long radio.
D) Both A and C.✓

62. In photoelectric effect removal of photons is observed at ________ energies.
A) Low.
C) Intermediate.
B) High.
D) Both A and C.✓

63. Which device is the most efficient?

A) Nuclear reactor.✓
B) Storage battery.
C) Silicon solar cell.
D) Dry battery cell.

The units of E in $E=mc^2$ are
A) kg m s^{-2}.
B) N m s^{-2}.
C) kg m^2 s^{-2}.✓
D) Both B and C.

65. Work done on a body equals change in its __________ energy.
A) Total.
B) Potential.
C) Kinetic.
D) All of these.✓

66. A pipe varies uniformly in diameter from 2 m to 4 m. An incompressible fluid enters the pipe with velocity 16m/sec. What is velocity of fluid when it leaves the pipe?
A) 64 m/sec.
B) 32 m/sec.
C) 8 m/sec.
D) 4 m/sec.✓

67. Transverse waves cannot be setup in __________
A) Metals.
B) Solids.
C) Fluids.✓
D) Soil.

68. The ratio of the __________ is called magnification.
A) Image size to object size.✓
B) Object size to image size.
C) Eyepiece size to object size.
D) None of these

Which of the following has the highest resistivity?
A) Germanium.
B) Silver. ✓
C) Copper.
D) Platinum.

70. An n-type semi-conductor is made by doping silicon crystal with __________
A) Indium.
B) Aluminium.
C) Arsenic.✓
D) Both B and C.

71. Objects cannot be accelerated to the speed of light in free space is consequence of
A) Mass variation.
B) Energy-mass relationship.
C) Inertia forces.
D) All of these.✓

72. A certain radioactive mass decays from 64 gm to 2 gm in 20 days. What is its half-life?
A) 5 days.
B) 4 days.✓
C) 10 days.
D) 6 days.

If inductance is denoted by L and resistance by R, which of the following is true for a choke?
A) R is large, L is very small.
B) R is very small, L is large.✓
C) Both R and L are large.
D) Both R and L are very small.

74. A force 2i + j has moved its point of application from (2,3) to (6,5). What is work done?
A) -10.
B) +10.✓
C) -18.
D) +18.

75. The escape velocity corresponds to __________ energy gained by body, which carries it to an infinite distance from the surface of earth.
A) Total.
B) Potential.
C) Initial kinetic.✓
D) None of these.

76. The drag force decreases as the speed of an object moving through fluid __________
A) Increases.
B) Decreases.✓
C) Remains constant.
D) Both B and C.

Light year is a measure of
A) Distance.✓
B) Time.
C) Intensity of light.
D) Velocity.

78. A yellow light of wavelength 500 mm emitted by a single source passes through two narrow slits 1 mm apart. How far apart are two adjacent bright fringes when interference is observed on a screen 10 m away?
A) 5 mm.✓
B) 1.33 mm.
C) 0.5 mm.
D) 50 mm.

79. The heat produced by a current I in the wire of resistance R during time interval t is
A) I^2/Rt.
B) I^2Rt.✓
C) $I^2/R/t$.
D) IR^2t.

Which of the following is the most ductile?
A) Glass.
B) Copper.✓
C) Cast iron.
D) High carbon steel.

81. Which Indian personality served as the President of the UN General Assembly in 1953-54?
(A) S. Radha Krishnan
(B) Gopalaswamy Ayyangar
(C) V.K Menon
(D) Vijayalakshami Pandit✓

82. In which organ of the United Nations, all member states of the UN are represented?
(A) Economic and Social Council
(B) General Assembly✓
(C) Security Council
(D) Human Rights Council

83. Under which act, the Muslims' demand of 'Separate Electorate' was first conceded by the British Government?
(A) The Indian Councils Act, 1892
(B) The Indian Councils Act, 1909✓
(C) The Government of India Act, 1919
(D) The Government of India Act, 1935

The constitution of the All India Muslim League was drafted by a Committee in 1907 headed by:
(A) Nawab Viqar-ul-Mulk
(B) Nawab Mohsin-ul-Mulk
(C) Maulana Muhammad Ali Jauhar✓
(D) Justice Shah Din

85. On Jan, 10, 2020, sultan Qaboos bin Said of _____ died.
(A) Jordan (B) Kuwait (C) Oman✓ (D) Yemen

86. When US and Taliban clinched historic deal for Afghan deal?
(A) Jan. 2020 (B) Feb 2020✓ (C) March 2020 (D) April 2020

Atmospheric pressure at sea level is:
(A) 750 mm.
(B) 760 mm.✓
(C) 770 mm.
(D) None of these

88. When there is an active upward ascent of lighter warm air over the cold dense air, the front is called:

(A) Cold front (B) Warm front✓
(C) Occuluded front (D) None of these

89. **Which number can replace both the questions marks?**
(A) 5 (B) 10✓
(C) 25 (D) 100

90. **A doll is sold for Rs. 220.00. What was the cost of doll if rate of profit was 10% of the cost?**
(A) Rs. 198.00✓ (B) Rs. 200.00
(C) Rs. 210.00 (D) Rs. 240.00

91. **I think is used to be a good school but it has been_____ for twenty years or so.**
(A) Look to one's laurels (to be contented on past achievements)
(B) Play fast and loose
(C) Rest on one's laurels✓
(D) A fool's paradise

☛ **He is looking for someone to offer her glamorous well paid and undemanding job, but I think he is_____**
(A) A happy medium
(B) Cry for the moon (to want or ask something which is impossible to get)✓
(C) Happy go lucky (D) Hard boiled

93. **When a gas turns into a liquid, the process is called:**
(A) Condensation✓ (B) Evaporation (C) Deposition (D) Sublimation

94. **Yeast used in making of bread is a:**
(A) Fungus (B) Plant (C) Bacteria✓ (D) Seed

95. **Data processing is also called:**
(A) Data computing✓ (B) Information technology
(C) Information system (D) Calculating

96. **An electronic device that accepts, processes data and produces information is called:**
(A) Input device (B) Computer✓
(C) Output device (D) Operating system

☛ **Sahib Us-Ser is the nickname of:**
(A) Hazrat Huzaifa (R.A)✓ (B) Hazrat Uqba (R.A)
(C) Hazrat Saad (R.A) (D) Hazrat Khuzaifa (R.A)

98. **Masjid-e-Khaif is located in:**
(A) Muzdilifa (B) Arafat (C) Mina✓ (D) None

.99 پریم چند کا کون سا ناول سماج کے ظلم کانمایاں ثبوت ہے؟
(A) میدان عمل (B) بازار حسن✓ (C) گودان (D) امراو جان ادا

.100 مضمون 'مامتا' کس کی تصنیف ہے؟
(A) عطاالحق قاسمی (B) احمد ندیم قاسمی✓ (C) مرزا ادیب(D) پریم چند

Paper Code **B**

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☛ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-2

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **When a body moves in a circle, the angle between its linear velocity $\vec{v}$ and angular velocity $\vec{\omega}$ is:**
(A) 180° (B) 90°✓
(C) 0° (D) 45°

2. **The efficiency of carnot engine depends upon:**
(A) Sink temperature (B) Source temperature
(C) Both source and sink temperature✓ (D) The working substance

☛ **Distance between two consecutive nodes is:**
(A) λ (B) $\frac{\lambda}{4}$
(C) $\frac{\lambda}{2}$✓ (D) 2λ

4. **$\hat{i}.(\hat{j}\times\hat{k})$ is equal to:**

(A) $\hat{k}$ (B) 1✓
(C) 2 (D) 0

5. One geo-stationary satellite covers a longitude of:
(A) 270° (B) 120°✓
(C) 90° (D) 360°

The frequency of second's pendulum is:
(A) 1 Hz (B) 2 Hz
(C) 0.5 Hz✓ (D) 5 Hz

7. A cricket ball is hit so that it travels straight up in air and acquires 3 seconds to reach the maximum height. Its initial velocity is:
(A) 10 ms^{-1} (B) 15 ms^{-1}✓
(C) 29.4 ms^{-1} (D) 12.2 ms^{-1}

8. The pressure exerted by a column of mercury 76 cm high and at 0°C is called:
(A) 1 atm✓ (B) 1 Nm^{-2}
(C) 1 Pascal (D) None of these

9. If a single convex lens is placed close to eye, then it is being used as:
(A) Telescope (B) Microscope
(C) Magnifying glass✓ (D) None of these

The range of projectile is directly proportional to:
(A) $\sin^2\theta$ (B) $\sin 2\theta$✓
(C) $\sin\theta$ (D) $2\sin\theta$

11. Beats are used to find:
(A) Frequency✓ (B) Wavelength
(C) Intensity (D) Speed

12. A stone is thrown up from the surface of earth when it reaches at maximum height, its K.E. is equal to:
(A) Mgh (B) $\frac{1}{2}mv^2$
(C) Zero✓ (D) 2mgh

The speed of sound in air depends upon:
(A) Temperature (B) Humidity
(C) Density (D) All of these✓

14. Solid angle subtended at the centre by a sphere is:
(A) 2π (B) 4π✓
(C) 6π (D) 8π

15. The maximum drag force on falling sphere is 9.8 N, its weight is:
(A) 1 N (B) 9.8 N✓
(C) 19.8 N (D) 4.9 N

Which one of the following media can transmit both transverse and longitudinal waves:
(A) Solid✓ (B) Liquid
(C) Gas (D) Plasma

17. The linear velocity of disc moving down an inclined plane is:
(A) $\sqrt{gh}$ (B) $\sqrt{\frac{4}{3}gh}$✓

(C) $\sqrt{\frac{2}{3}gh}$ (D) $\sqrt{\frac{gh}{2}}$

18. The force which can do no work on the body on which it acts is:
(A) Elastic force (B) Frictional force
(C) Centripetal force✓ (D) Gravitational force

19. The speed of sound has maximum value in:
(A) Oxygen (B) Air
(C) Hydrogen✓ (D) Helium

20. The angular momentum $\vec{L}$ is given by:
(A) $m\vec{w}$ (B) $\vec{w}\times\vec{r}$
(C) $\vec{r}\times\vec{F}$ (D) $\vec{r}\times\vec{P}$✓

On increasing the tension, frequency of vibration of a string:
(A) Increases✓ (B) Decreases
(C) Remains constant (D) First increases then decreases

22. The percentages of uncertainty in measurement of mass and velocity are 2% and 3%. The maximum uncertainty in the measurement of kinetic energy is:
(A) 11% (B) 8%✓
(C) 6% (D) 1%

23. The device used for the measurement of liquid flow is:
(A) Manometer (B) Barometer
(C) Hydrometer (D) Venturimeter✓

24. Boltzmann's constant 'k' is equal to:
(A) $\frac{R}{N_A}$✓ (B) $\frac{1}{RN_A}$
(C) $\frac{N_A}{R}$ (D) RN_A

The equation of Michelson's interferometer is:
(A) $L=\frac{m\lambda}{2}$✓ (B) $L=\frac{m\lambda}{4}$
(C) $L=m\lambda$ (D) $L=2m\lambda$

26. Isothermal process is carried out at constant:
(A) Volume (B) Pressure
(C) Energy (D) Temperature✓

27. The magnitudes of rectangular components of a vector are equal, if its angle with x-axis is:
(A) 0° (B) 30°
(C) 45° (D) 90°✓

One radian is equal to:
(A) 67.3° (B) 57.3°✓
(C) 87.3° (D) 45°

29. The image formed by simple microscope is:
(A) Real and inverted (B) Erect and virtual
(C) Real and erect (D) Inverted and virtual

30. The product of time period and frequency is:
(A) Zero (B) 1✓
(C) π (D) 2

31. The wavelength of the fundamental mode of vibration of a closed pipe of length 'l' is:
(A) $\frac{l}{2}$ (B) l
(C) $2l$ (D) $4l$✓

32. Change in momentum is also called as:
(A) Force (B) Acceleration
(C) Torque (D) Impulse✓

Minimum number of communication satellites required to cover whole earth is:
(A) 5 (B) 4
(C) 3✓ (D) 2

34. The horizontal range of projectile at 30° with horizontal is the same as that at an angle of:
(A) 45° (B) 60°✓
(C) 90° (D) 120°

35. The stationary waves consist of:
(A) Crests and troughs (B) Compressions and elongations
(C) Nodes and antinodes✓ (D) Reflection and rarefaction

36. When one mirror of a Michelson Interferometer is moved a distance of 0.5mm, 2000 fringes are observed. The wavelength of light used is:
(A) 5000 m (B) 5000 A°✓
(C) 500 cm (D) 2000 A°

The area between velocity-time graph and the time axis is numerically equal to:
(A) Speed of object (B) Distance covered by the object✓
(C) Average velocity of the object (D) Acceleration of the object

38. The optical fibre is covered for protection by a:
(A) Glass Jacket (B) Plastic Jacket✓
(C) Copper Jacket (D) Aluminium Jacket

39. International Telecommunication Satellite Organization operates at microwaves frequencies of:
(A) 4, 6, 8 and 10 Hz (B) 4, 6, 11 and 14 GHz✓
(C) 4, 6, 8 and 12 Hz (D) 4, 8, 11 and 6 GHz

40. Which is the process in which temperature of the system remains constant?
(A) Isobaric process (B) Isochoric process
(C) Isothermal process✓ (D) Adiabatic process

41. When a body is whirled in a horizontal circle by means of a string, the centripetal force is supplied by:
(A) Mass of a body (B) Velocity of a body
(C) Tension in the string✓ (D) Centripetal acceleration

If the resultant of two vectors each of magnitude F is also of magnitude F, the angle between them will be:
(A) 30° (B) 60°
(C) 90° (D) 120°✓

43. The dimensions of co-efficient of viscosity are:
(A) $[ML^{-1}T^{-1}]$✓ (B) $[MLT^{-2}]$
(C) $[MLT^{-1}]$ (D) $[ML^{2}T^{-1}]$

44. The pitch of sound depends upon:
(A) Intensity of sound (B) Loudness of sound
(C) Beat frequencies (D) Harmonics✓

45. The lower reading of blood pressure is called:
(A) Systolic pressure (B) Diastolic pressure✓
(C) Normal pressure (D) Non-normal pressure

When the projectile reaches the highest point of trajectory, the vertical component of velocity becomes:
(A) Small (B) Maximum
(C) $v_i \cos\theta$ (D) Zero✓

47. If a car moves with a uniform speed of 2m / sec, in a circle of radius 0.4 m, its angular speed is:
(A) 4 rad/sec (B) 5 rad/sec✓
(C) 1.6 rad/sec (D) 2.8 rad/sec

48. The value of solar constant is:
(A) 1.4 kw m^{-2}✓ (B) 1.0 kw m^{-2}
(C) 4.1 kw m^{-2} (D) 1 kw m^{-2}

49. The frequency of waves produced in microwave oven is:
(A) 1435 Hz (B) 2450 MHz✓
(C) 1860 MHz (D) 2850 Hz

50. A system does 600 J of work and at the same time has its internal energy increased by 320 J. How much heat has been supplied?
(A) 280 J (B) 920 J✓
(C) 600 J (D) 200 J

A light year is the distance, light travels in one year. How many meters are there is one light year?
(A) 9.5×10^{-15} m (B) 9.5×10^{15} m✓
(C) 9.5×10^{15} cm (D) 9.5×10^{15} km

52. For total assessment of uncertainty in the final result obtained by multiplication and division:
(A) Absolute uncertainties are added (B) Fractional uncertainties are added
(C) % age uncertainties are added✓ (D) Error are added

Resultant of two perpendicular vectors of equal magnitude (say, A) will be:
(A) A (B) 2A
(C) $\sqrt{2}A$✓ (D) A^2

54. When a ball is thrown straight up, the acceleration at its highest point is:
(A) Upward (B) Downward✓
(C) Zero (D) Horizontal

55. A bullet shot straight up returns to its starting point in 10 sec. Its initial speed was:
(A) 9.8 ms^{-1} (B) 24.5 ms^{-1}
(C) 49 ms^{-1}✓ (D) 98 ms^{-1}

56. A body of mass 1.0 kg drops from the top of a tower of height 50 m, what will be its K.E. 10 m below the top?
(A) 490 J (B) 49 J
(C) 98 J✓ (D) 980 J

The ratio of orbital velocity to escape velocity is:
(A) $\sqrt{2}$ (B) $\frac{1}{\sqrt{2}}$ ✓
(C) $\frac{1}{2}$ (D) 2

58. One radian is equal to:
(A) 2π rev (B) $\frac{\pi}{4}$ rev
(C) $\frac{\pi}{2}$ rev (D) $\frac{1}{2\pi}$ rev ✓

59. Weight of a 60 kg man in moving elevator (downward) with constant acceleration of $\frac{1}{2}g\,(g = 10\,m^{-2})$:
(A) Zero (B) 300 N✓
(C) 600 N (D) 200 N

60. The law of conservation of energy is the basis of:
(A) Stream line flow (B) Equation of continuity
(C) Bernoulli's equation✓ (D) Venturi relation

When one mirror of a Michelson interferometer is moved a distance of 0.5 mm, 2000 fringes are observed. The wavelength of light used is:
(A) 5000 m (B) 5000 A°✓
(C) 500 cm (D) 2000 A°

62. If a string is fixed at both ends vibrates in "n" loops, then wavelength in term of length "l" of string is given by:
(A) $\frac{nl}{2}$ (B) $\frac{l}{2n}$
(C) $\frac{2l}{n}$ ✓ (D) $\frac{2l}{v}$

63. In order to produce beats, the two sound waves should have:
(A) The same amplitude (B) Slightly different amplitude
(C) The same frequency (D) Slightly different frequencies✓

When wave is reflected from the boundary of denser medium then phase of wave changes by:
(A) 0° (B) 90°
(C) 180°✓ (D) 270°

65. The process of confining the beam of light to vibrate in one plane is called:
(A) Interference (B) Diffraction
(C) Polarization✓ (D) Total internal reflection

66. If magnifying power of magnifying glass is 3, then focal length will be:
(A) 25 cm (B) 12.5 cm✓
(C) 5 cm (D) 3 cm

67. The kinetic theory of gases suggests the average energy per molecule is:
(A) $\frac{1}{2}KT$ (B) KT
(C) $\frac{3}{2}KT$ ✓ (D) 2 KT

The optical fibre is covered for protection by a:
(A) Glass Jacket (B) Plastic Jacket✓
(C) Copper Jacket (D) Aluminium Jacket

69. The dimensions of work are:
(A) $[MLT^{-1}]$ (B) $[MLT^{-2}]$
(C) $[ML^2T^{-2}]$✓ (D) [MLT]

70. The speed of sound in air does not depend upon:
(A) Density (B) Pressure✓
(C) Humidity (D) Temperature

The S.I units of angular momentum are given by:
(A) $J.s^{-2}$ (B) $J.s^{-1}$
(C) J.s✓ (D) J.m

72. The distance between two consecutive nodes is:
(A) $\frac{\lambda}{2}$ ✓ (B) $\frac{\lambda}{4}$
(C) λ (D) 2λ

73. S.I unit of intensity of light is:
(A) Ampere (B) Mole
(C) Candela✓ (D) Joule

74. The S.I units of flow rate are:
(A) m^2s^{-1} (B) m^3s^{-2}
(C) m^3s^{-1}✓ (D) m^2s^{-2}

75. Number of spark plugs needed in the diesel engine are:
(A) 0✓ (B) 1
(C) 2 (D) 3

Bending of light around the edges of an obstacle is called:
(A) Refraction (B) Polarization
(C) Interference (D) Diffraction✓

77. The difference between C_P and C_V is equal to:
(A) Plank's constant (B) General gas constant✓
(C) Molar gas constant (D) Boltzman constant

78. The magnitude of $\hat{i}.(\hat{j}\times\hat{k})$ is equal to:
(A) 0 (B) 1✓

(C) -1 (D) $\hat{i}$

One radian is equal to:
(A) 57.3°✓ (B) 56.3°
(C) 58.3° (D) 360°

80. The light emitted from light emitting diode (LED) has a wavelength:
(A) 1.3 μm✓ (B) 1.2 μm
(C) 1.4 μm (D) 1.5 μm

81. Ustad Allah Baksh was a famous ________ of Pakistan.
(A) Classical singer (B) Sitar player
(C) Tabla player (D) Painter✓

82. UNFCC (UN Framework Convention on Climate Change) was adopted during the Earth Summit at Rio de Janeiro (1992). When did it come into force?
(A) March 1994✓ (B) August 1995
(C) October 1996 (D) January 1994

83. Which of the following amendments were proposed by Quaid-i-Azam in the Nehru Report 1928, to make it acceptable to the Indian Muslims?
(A) The Muslims should be given one third representation in the Central Legislature
(B) For ten years, the Muslims should be represented in Punjab and Bengal according to their population
(C) Residuary powers should be given to the provinces
(D) All of the above✓

Maulana Muhammad Ali Jauhar had started publishing his famous English Newspaper "Comrade" from the year:
(A) 1911✓ (B) 1913
(C) 1922 (D) 1925

85. When WHO declared Europe a new epicentre of coronavirus?
(A) Jan 2020 (B) Feb. 2020
(C) March 2020✓ (D) April 2020

86. Corona Viruses were discovered in the:
(A) 1950s (B) 1960s✓
(C) 1970s (D) 1980s

Ghassel-ul-Malaika is the title of:
(A) Hazrat Abu Talha (R.A)
(B) Hazrat Khuzaifa (R.A)
(C) Hazrat Hanzala (R.A)✓
(D) Hazrat Jaffar (R.A)

88. Who was the grandfather of the *Khatam-un-Nabiyeen* Holy Prophet (PBUH)?
(A) Hazrat Abu Talib
(B) Hazrat Abbas (RA)
(C) Hazrat Abdul Muttalib✓

89. On 21st of June, the Sun shines vertically on the:
(A) Tropic of Capricorn (B) Tropic of Cancer✓
(C) Equator (D) Arctic Circle

The hot molten material erupted from a volcano is called:
(A) Lava✓ (B) Magma

(C) Pyro-clast (D) None of these

91. Find the arithmetic mean between 4 and 6.
(A) 1 (B) 2 (C) 5✓ (D) 3

92. Find the missing number.
3, 5, 9 and 17.....
(A) 32 (B) 33✓ (C) 34 (D) None

93. he says he will get a well-paid job but I think it is just_____
(A) A happy medium (B) A lame duck
(C) Pie in the sky (something good promised in future but one is not likely to get)✓
(D) Cheek by jowl

The factory workers' decision to strike was_____ for factory owners.
(A) A smash hit
(B) A smack in the eye (an insult or rebuff)✓
(C) Cut down to size
(D) Pie in the sky

95. The disease Diphtheria affects the ________ in the human body.
(A) Kidneys (B) Intestines
(C) Throat✓ (D) Joints

96. LED technology is energy efficient. What does LED stand for?
(A) Low Energy Data (B) Low Energy Diode
(C) Light Emitting Diode✓ (D) None of these

________ is category software(s).
(A) Application software (B) System software
(C) Both (a) and (b)✓ (D) None of these

98. ________ is an example of packaged software.
(A) MS Word (B) Front Page (C) MS-Access (D) All✓

99. غالب کی تاریخ ولادت اور تاریخ وفات بتائیں؟
(A) 1869-1797✓ (B) 1868-1803 (C) 1878-1800 (D) 1978-1900

100. تم میرے پاس ہوتے ہو گویا
جب کوئی دوسرا نہیں ہوتا
یہ شعر کس کا ہے؟
(A) مومن✓ (B) غالب (C) میر تقی میر (D) میر درد

Paper Code
C

PUBLIC SERVICE COMMISSION

ROLL NO.

Time Allowed: Two Hours Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

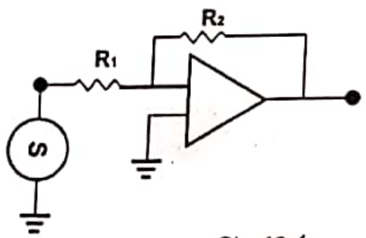
Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original Model Paper-3

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. If R1 = 10 kΩ and R2 = 100 kΩ then the gain of op-amplifier as inverting amplifier is:



A) –1
B) 10
C) –10✓
D) 1

2. If inputs A = 1, B = 0 and output X = 1, then it corresponds to the operation of a:
A) AND Gate
B) NAND Gate✓
C) XNOR Gate
D) NOR Gate

☛ **The value of Stefan's Boltzmann Constant is:**
A) $4.28 \times 10^{-7}\ Wm^{-2}K^{-4}$
C) $3.62 \times 10^{-4}\ Wm^{-2}K^{-4}$

B) $4.28 \times 10^{-4}\ Wm^{-2}K^{-4}$
D) $5.67 \times 10^{-8}\ Wm^{-2}K^{-4}$✓

4. Einstein's photoelectric equation is given by:
A) $hf = \phi = \frac{1}{2} mv^2$✓
B) $E = mc^2$
C) $E = hc^2$
D) $hf = \frac{1}{2} mv^2$

5.
A)
B)
C)
D)

6. If a particle of mass 5.0 mg moves with the speed of 8.0 m/sec, then the de-Broglie's wavelength will be:
A) 1.68×10^{-27} m
B) 1.70×10^{-25} m
C) 1.65×10^{-29} m
D) 1.66×10^{-29} m✓

7. LASER is a device which can produce:
A) Intense beam of light
B) Intense, Coherent, Monochromatic beam of light✓
C) Coherent beam of light
D) Monochromatic beam of light

☛ **A crack allows greater amount of X-rays to pass, which appears on photographic film as:**
A) Blue Area
B) Dark Area✓
C) Bright Area
D) Red Area

9. The emission of γ-radiations from the nucleus is generally represented by the equation:
A) ${}^A_Z X \to {}^A_Z X^* + \gamma$-radiations
B) ${}^A_Z X^* \to {}^A_Z X + \beta$-particles
C) ${}^A_Z X^* \to {}^A_{Z-1} X + \gamma$-radiations
D) ${}^A_Z X^* \to {}^A_Z X + \gamma$-radiations✓

10. For intermediate energy of radiations, the dormant process is:
A) Compton Effect✓
B) Nuclear Effect
C) Photoelectric Effect
D) Pair Production

11. The dimensions of gravitational constant "G" are:
A) $[ML^{-2}T^{-1}]$
B) $[M^2L^{-2}T^{-1}]$
C) $[ML^{-2}T^{-2}]$
D) $[M^{-1}L^3T^{-1}]$ ✓

☛ **Ultraviolent radiations cause:**
A) Severe Crop Damage
B) Sunburn, blindness, skin cancer
C) Decay of Microorganisms
D) All of the above✓

13. Unit vector in the direction of vector $2\hat{i} - 4\hat{j}$ will be:
A) $\frac{2\hat{i} - 4\hat{j}}{\sqrt{6}}$
B) $\frac{4\hat{i} - 2\hat{j}}{\sqrt{10}}$
C) $\frac{\hat{i} - 2\hat{j}}{\sqrt{5}}$✓
D) $\frac{\hat{i} - 2\hat{j}}{\sqrt{7}}$

14. If the force of magnitude 8 N acts on a body in direction making an angle 30, its X and Y components will be:

A) $F_x = 3\sqrt{3}$ $F_y = 4$
C) $F_x = 4\ 3$ $F_y = 8$
B) $F_x = 4\sqrt{3}$ $F_y = 4$✓
D) $F_x = 8$ $F_y = 4\sqrt{3}$

15. **Two waves of slightly different frequencies and travelling in the same direction lead to:**
A) Stationary Waves
C) **Beats**✓
B) Interference
D) Both B and C

What is it that we use to calculate the speeds of distant stars and galaxies?
A) **Doppler Effect**✓
C) Beats
B) Interference
D) All of the above

17. **In Young's Double Slit Experiment, if the distance between slits and screen is doubled, then fringe spacing becomes:**
A) Zero
C) **Doubles of the original value**✓
B) One
D) Half of the original value

18. **In Michelson's interferometer 792 bright fringes pass across the field of view when its movable mirror is displaced through 0.233 mm using the equation $I = m\frac{\lambda}{2}$ the wavelength of light used is:**
A) **588 nm**✓
C) 348 nm
B) 620 nm
D) 400 nm

In Michelson's Experiment, the formula to calculate the speed of light is:
A) $c = 2\ fd$
C) $c = \frac{16f}{d}$
B) $c = \frac{2\pi f}{d}$
D) **$c = 16\ fd$**✓

20. **The information received at the other end of a fibre can be inaccurate due to _______ of the light signal.**
A) Longer wavelengths
C) Intensity
B) Frequency
D) **Dispersion or Spreading**✓

21. **The pressure on the other sides and everywhere inside the vessel will be according to the:**
A) **Pascal's Law**✓
C) Boyle's Law
B) Hook's Law
D) Charles's Law

22. **The value of universal; Gas Constant 'R' is:**
A) $8.314\ Jmol^{-2}K^{-1}$
C) $1.38\ Jmol^{-1}K^{-1}$
B) $1.38\ Jmol^{-1}K^{-2}$
D) **$8.314\ Jmol^{-1}K^{-1}$**✓

For adiabatic process, the First Law of Thermodynamics is:
A) $W = \Delta U + Q$
C) $Q = W$
B) $Q = -W$
D) **$W = -\Delta U$**✓

24. **The entropy of the universe always:**
A) Decreases
C) Remains the same
B) **Increases**✓
D) Both A and B

25. **The work done in moving a unit positive charge from one point to another**

against the electric field is a measure of:
A) Capacitance
B) **Potential difference between two points**✓
C) Intensity of electric field
D) Resistance between two points

26. **In Millikan's Method, the radius of droplet can be calculated by:**
A) $r = \sqrt{\frac{qv_t}{2\rho g}}$
C) $r^2 = \frac{9\eta v_t}{2\rho g}$✓
B) $r^2 = \frac{q\eta v_t}{\rho g}$
D) $r = \frac{9\eta v_t}{2\rho g}$

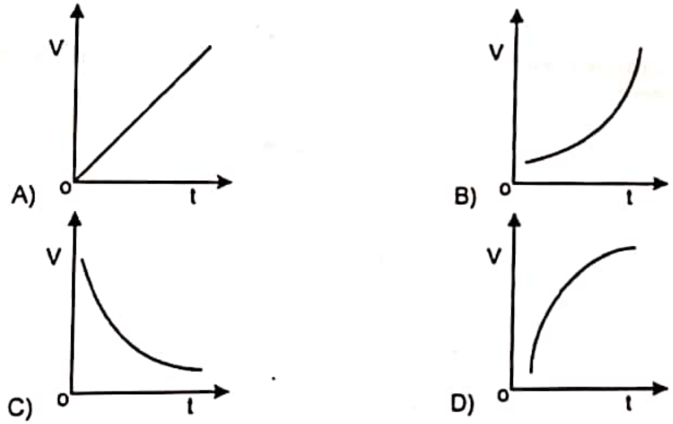
27. **The scalar product of i and k is:**
A) **Zero**✓
C) 1
B) 90°
D) –1

28. **If the body is rotating with uniform angular velocity, then its torque is:**
A) **Zero**✓
C) Maximum
B) Clockwise
D) Remains the same

Speed of light, radio waves and microwaves in vacuum is:
A) $3 \times 10^5\ ms^{-1}$
C) $3 \times 10^6\ ms^{-1}$
B) $3 \times 10^3\ ms^{-1}$
D) **$3 \times 10^8\ ms^{-1}$**✓

30. **A body is moving with an initial velocity of 2 kms^{-1}. After a time of 50 secs its velocity becomes 1.5 kms^{-1}. Its acceleration will be:**
A) $30\ ms^{-1}$
C) $20\ ms^{-1}$
B) $40\ ms^{-1}$
D) **$10\ ms^{-1}$**✓

31. **When a car moves with constant acceleration, the velocity-time graph is a:**



In elastic collision, when a massive body collides with light body at conditions m1 >> m2 and v2 = 0 ms^{-1}, then the change in velocity will be written as:

A) $v_1' = -v_1$; $v_2' = v_1$
B) $v_1' = v_1$; $v2' = 0$
C) $v_1' = v_1$; $v_2' = 2v_1$✓
D) $v_1' = -v_1$; $v_2' = 0$

33. If a certain force acts on an object and changes its kinetic energy from 65 J to 130 J, then work done by the force will be:
A) 92.5 J
B) 97.5 J
C) 65 J✓
D) 130 J

34. A bullet train is lifted above the rails due to magnetic effect, thus friction is reduced to minimum and speed can be enhanced up to:
A) 500 Km min^{-1}
B) 500 Km sec^{-1}
C) 1000 Km h^{-1}
D) 500 Km h^{-1}✓

35. In a certain circuit, if the transistor has a collector current of 10 mA and base current of 50 μA, then the current gain of the transistor is:
A) 250
B) 100
C) 150
D) 200✓

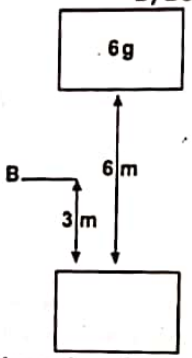
36. A signal that is applied at the inverting input terminal of an op-amplifier undergo amplification, at the output terminal with a phase shift of:
A) 0°
B) 270°
C) 360°
D) 180°✓

37. Solar energy at normal incidence outside the earth's atmosphere is about:
A) 2.5 kWm^{-2}
B) 0.6 kWm^{-2}
C) 1.4 kWm^{-2}✓
D) 2.0 kWm^{-2}

Linear velocity or tangential velocity of any particle moving in a circular path of radius 2 m with angular velocity 8 $rads^{-1}$ will be:
A) 16 ms^{-1}✓
B) 4 ms^{-1}
C) 10 ms^{-1}
D) 6 ms^{-1}

39. What is torque 'τ' in a circular motion?
A) $\tau = mr^2\pi$✓
B) $\tau = mr^2\alpha$
C) $\tau = mr\alpha$
D) $\tau = mr^2/\alpha$

40. If the mass attached with a spring becomes four times, the time period of vibration becomes:
A) One fourth
B) 3/4
C) Half
D) Double✓



A body of mass 6 g falls under action of gravity. At initial position 'A' its P.E. is

480 J and K.E. is 0 J. During its downward journey at point 'B' its energies will be ($g = 10\ ms^{-2}$):
A) P.E. = 300 J and K.E. = 180 J✓
B) P.E. = 180 J and K.E. = 300 J
C) P.E. = 230 J and K.E. = 250 J
D) P.E. = 250 J and K.E. = 230 J

42. A tiny droplet of oil of density 'ρ' and radius 'r' falls through air under force of gravity. If viscosity of air is 'η', the terminal velocity acquired by the oil drop is given by:
A) $v_t = \frac{4gr^2\rho}{9\eta}$
B) $v_t = \frac{9\eta r^2\rho}{4g}$
C) $v_t = \frac{2gr^2\rho}{9\eta}$✓
D) $v_t = \frac{9\eta r^2\rho}{2g}$

43. Torricelli's theorem be written as:
A) $v_2 = \sqrt{2g(h_1 - h_2)}$✓
B) $v_2 = \sqrt{g(h_2 - h_1)}$
C) $v_2 = \sqrt{2g(h_2 - h_1)}$
D) $v_2 = \sqrt{g(h_1 - h_2)}$

44. When the spaceship rotates with ________ frequency, the artificial gravity like earth is produced to inhabitants of the ship:
A) $2\pi = \sqrt{\frac{R}{g}}$
B) $2\pi = \sqrt{\frac{l}{g}}$
C) $\frac{1}{2\pi} = \sqrt{\frac{R}{g}}$
D) $\frac{1}{2\pi} = \sqrt{\frac{R}{g}}$✓

In a microwave oven, the wave produced has a wavelength of 12 cm at a frequency of:
A) 2452 Hz
B) 2456 Hz
C) 2455 Hz
D) 2450 Hz✓

46. Speed of the waves is equal to:
A) fλ
B) $\frac{\lambda}{T}$
C) Both A and B✓
D) λT

47. A particle carrying charge of 2e falls through a potential difference of 3.0 V. Calculate the energy required by it:
A) 9.6×10^{-19} J✓
B) 9.1×10^{-19} J
C) 1.6×10^{-19} J
D) 6.0×10^{-19} J

The deviation of I-V graph from the straight line is due to:
A) Decrease in temperature and decrease in resistance
B) Increase in temperature and increase in resistance✓
C) Decrease in temperature and increase in resistance
D) Increase in temperature and decrease in resistance

49. The fractional change in resistance per Kelvin is known as:
A) Temperature coefficient of resistance✓

B) Thermal coefficient
C) Linear coefficient of expansion
D) Volumetric coefficient of expansion

50. **The energy supplied by the cell to the charge carriers is derived from the conversion of:**
A) Heat energy into Electrical energy
B) Chemical energy into Electrical energy✓
C) Solar energy into Electrical energy
D) Mechanical energy into Electrical energy

51. **Force experienced by a moving change in a magnetic field is:**
A) F = BA cosΘ
B) F = μo NI
C) F = q (v x B) ✓
D) F = I (L x B)

52. **The value of permeability of free space μo is:**
A) $4\pi \times 10^{-7}$ $WbA^{-1}m^{-1}$✓
B) $4\pi \times 10^{2}$ $WbA^{-2}m^{-2}$
C) $4\pi \times 10^{-7}$ $WbA^{-2}m^{-1}$
D) $4\pi \times 10^{2}$ $WbA^{-1}m^{-2}$

What shunt resistance must be connected across a Galvanometer of 20 Ω resistance which gives full scale deflection with 2.0 A current, so as to convert it into an Ammeter of range 10 A?
A) 5 Ω✓
B) 2 Ω
C) 3 Ω
D) 4 Ω

54. **The current measuring part of the Avometer consists of number of low resistances connected:**
A) At an angle of 180° with the galvanometer
B) Parallel with the galvanometer✓
C) At an angle of 45° with the galvanometer
D) Perpendicular to the galvanometer

55. **A charge of two micro coulombs (2μC) moves with velocity of two meter per second (2 m/sec) in the direction of two Tesla magnetic field. The force that will act on it will be:**
A) 2 N
B) Zero✓
C) 8 N
D) 4 N

We have two coils placed close to each other. When we switch on the battery connected to primary coil while keeping the sliding contact of rheostat at fixed position, the reading of Galvanometer:
A) First increases and then becomes zero✓
B) First increases and then becomes constant at some value
C) Increases with the passage of time
D) Remains zero

57. **Power losses in a transformer can be minimized:**
A) By increasing turn ratio
B) By decreasing turn ratio
C) By stopping the flow of Eddy currents✓
D) Using material of the core whose hysteresis area is large

58. **In R-L Series circuit, the phase difference between applied voltage and current is given by the angle Θ which is:**

A $\theta = \tan^{-1}\frac{LR}{\omega}$
B) $\theta = \tan^{-1}\omega LR$
C) $\theta = \tan^{-1}\frac{\omega}{g}$ ✓
D) $\theta = \tan^{-1}\frac{\omega R}{L}$

Frequency of L-C circuit will resonate under the driving action of the antenna by angular value of:
A) Capacitance✓
B) Impedance
C) Inductance
D) Resistance

60. **To convert the Si crystal into p-type semi-conductor, which group element will be doped:**
A) Trivalent Element✓
B) Second Group Element
C) Fourth Group Element
D) Pentavalent Element

61. **Which one is the highest power multiple?**
A) Giga
B) Tera✓
C) Mega
D) Deca

SI unit of charge is ______.
A) Ampere✓
B) Volt
C) Coulomb
D) Calorie

63. **The electrical analog of mass is electricity is ________.**
A) Capacitance
B) Inductance
C) Charge✓
D) Resistance

64. **Which one of the following relations is correct?**
A) 1 wb m^{-2} = N m^{-1} A^{-1}
B) 1 Tesla = 10^{4} Gausses
C) 1 wb m^{-2} = 1 Tesla
D) All of these✓

65. **Life time of electron in metastable state is about _________.**
A) 10^{-5}sec
B) 10^{-3} sec
C) 10^{-8} sec✓
D) 10^{-2} sec

66. **The torque acting on a current carrying coil is given by __________.**
A) τ = NIAB cos α✓
B) τ = BIL sin α
C) τ = NIAB sin α
D) τ = BIL cos α

The grid in the cathode ray oscilloscope __________.
A) Controls number of waves
B) Controls the brightness of spot formed✓
C) Accelerates electrons
D) Has positive potential with respect to cathode

68. **The horizontal range of a projectile, at a certain place, is completely determined by**
A) The angle of projection✓
B) The initial velocity of projection
C) The mass of the projectile
D) Speed and mass of the projectile

69. **If velocity is double, then.**
A) Momentum increase 4 times and K.E increases 2 times
B) Momentum and K.E remain same
C) Momentum increases 2 times and K.E increase constant

D) Momentum increases 2 times and K.E increases 4 times✓

The consumption of energy by 60-watt bulb in 2 seconds is:

A) 20 J
B) 120 J✓
C) 30 J
D) 0.02 J

71. In transistors, the base region is very thin, of the order of
A) 10^{-3} cm
B) 10^{-4} m✓
C) 10^{-6} mm
D) 10^{-6} μm

72. The closed loop gain of OP-AMP depends on
A) Internal structure of OP-AMP
B) Externally connected resistances✓
C) Voltage of power supplies
D) Input resistance

The net charge on an N-type substance is
A) 0.7 volts✓
B) 0.3 volts
C) 0.25 volts
D) 0.07 volts

74. The value of Wien's constant is
A) 2.90×10^{-3} mK✓
B) 3.34×10^{-4} mK
C) 4.22×10^{-7} mK
D) 3.42×10^{-8} mK

75. The minimum frequency below which no electron is emitted from the metal surface is called
A) High frequency
B) Low frequency
C) Threshold frequency✓
D) Resonance frequency

76. In pair production, the type of photon used
A) α-particle
B) β-particle
C) X-rays
D) γ-radiations✓

The life time of an electron in an excited state is about 10^{-8} s. What is its uncertainty in energy
during this time?
A) 1.05×10^{-41} J
B) 1.05×10^{-26} J✓
C) 1.15×10^{10} J
D) 2.19×10^{-40} J

78. Velocity of electron moving in first orbit of hydrogen is
A) 2.19×10^{7} m/sec
B) 2.18×10^{7} m/sec
C) 2.2×10^{8} m/sec
D) 2.19×10^{6} m/sec✓

79. LASER is a potential energy source for inducing which type of reaction?
A) Radioactive
B) Fission
C) Ionization
D) Fusion✓

80. In the half-life of an element, the equation for the number of decaying atoms is given by
A) $\Delta \propto -N\Delta t$✓
B) $\Delta N = KN\Delta t$
C) $\Delta N \propto -n\Delta t$
D) $\Delta N = -\Delta N\Delta t$

De Beers is one of the biggest name in diamond industry. Who was the founder of De Beers Consolidated Mining Company?
(A) John Cecil Rhodes✓
(B) Joseph D. Rockefeller
(C) Krugger
(D) Robert Johnson

82. Who was the first UN High Commissioner for Human Rights?
(A) Mary Robinson✓
(B) Jose Ayla Lasso
(C) P.B. Samuel
(D) Wilfard Hansen

83. What was the significances of 21st Annual Session of All India Muslim League?
(A) Quaid-i-Azam presented Fourteen Points
(B) Allama Iqbal delivered Allahabad Address✓
(C) Lahore Resolution was passed
(D) Quaid-i-Azam was elected as permanent President of All India Muslim League

Which of the following leaders helped Quaid-i-Azam in the preparation of his Fourteen Points in 1929?
(A) Maulana Muhammad Ali Jauhar✓
(B) Maulana Shaukat Ali
(C) Liaquat Ali Khan
(D) Maulana Hasrat Mohani

85. Novel Coronavirus, a pneumonia outbreak was firstly reported in;
(A) China✓
(B) Hong Kong
(C) Taiwan
(D) Singapore

86. According to a new UN report, which continent could see 300,000 COVID-19 deaths this year?
(A) Asia
(B) North America
(C) Africa✓
(D) Europe

87. Who was a historian, jurist, philosopher, as well as a politician?
(A) Shams-ud-Din Ibn-i-Khalkan
(B) Abdur Rehman Ibn Khaldoon✓
(C) Abu Bakar Muhammad Ibn-i-Yahya

88. When law of inheritence was revealed?
(A) Three Hijrah
(B) Four Hijrah✓
(C) Five Hijrah
(D) Six Hijrah

89. The point in the Earth from where seismic waves spread out in all directions is:
(A) Seismic center
(B) Epicenter
(C) Earthquake Focus✓
(D) None of these

The continental crust ranges from:
(A) 7 to 20 km in thickness
(B) 20 to 70 km in thickness
(C) 40 to 150 km in thickness
(D) None of these✓

91. Think a number, double it, add 7 and then multiply it by 4 and then divide it by 6, if the answer is 10, what is the number?
(A) 2
(B) 3
(C) 4✓
(D) 6

92. If 7 men in 100 are criminals, how many men in 500 are not criminals?
(A) 435
(B) 465✓
(C) 455
(D) 35

93. In their search for artifacts, archaeologists are often ______ not because a suspected site is remote and isolated but because it is:
(A) Misled, verified
(B) Undeterred, unearthed
(C) Venerated, sacred
(D) Frustrated, urbanized✓

☛ Advertising alone no matter how ______ cannot convince people to ______ an item that answers no real and vital need.
(A) Stringent, ignore
(B) Outrageous, disregard
(C) Innocuous, modify
(D) Extensive, purchase✓

95. **What was the code name given to United States Navy SEALS operation leading to elimination of Osama bin Ladin in Abbottabad?**
(A) Lion Heart
(B) Neptune Spear✓
(C) Geronimo (D) Shockwave

96. **Pedagogy is a science of:**
(A) Children disease (B) Language
(C) Civilization **(D) Teaching✓**

97. ______ **is not an application software.**
(A) Internet **(B) Device driver✓**
(C) Games
(D) Multimedia software

☛ **An inkjet printer is an example of a(n):**
(A) LASER printer (B) Impact printer
(C) COM printer **(D) Non-Impact Printer✓**

99. 'لاہور کا جغرافیہ' اور 'باسٹل میں رہنا ہے' کس کے مزاحیہ مضامین ہیں؟
(A) امجد اسلام امجد (B) ابن انشا
(C) پطرس بخاری✓ (D) چراغ حسن حسرت

100. اقتل حسین اصل میں مرگِ یزید ہے
اسلام زندہ ہوتا ہے ہر کربلا کے بعد
اس مشہور شعر کے شاعر کا کیا نام ہے؟
(A) محمد علی جوہر✓ (B) مومن خان مومن
(C) ابراہیم ذوق (D) ان میں سے کوئی نہیں

Paper Code D

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET.❷Write PAPER CODE on your ANSWER SHEET carefully ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer.❼Sign the Answer Sheet in the box provided at the bottom corner.❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original Model Paper-4

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Decay constant 'λ' is given as**
A) $-\dfrac{\Delta N/N}{\Delta t}$✓ C) $-\dfrac{N}{\Delta t}$
B) $-\dfrac{\Delta N}{\Delta t}$ D) $-\dfrac{\Delta N/N}{\Delta t}$

☛ **The SI unit of absorbed dose 'D' i.e. radiation effect is Gray and one Gray is equal to**
A) kJ / mol C) kg / J
B) J / mol **D) J / kg✓**

3. **The principle of homogeneity of dimensions determines**
A) Only variable in the equation
B) Only constant in the equation
C) Correctness of an equation✓
D) Constant and variable in the equation

4. **For a body to be in complete equilibrium**
A) Linear acceleration is zero

B) Angular acceleration is zero
C) Linear acceleration is zero but angular acceleration is not zero
D) Linear acceleration and angular acceleration both should be zero✓

If length of a spanner is 'l' and a force 'F' is applied on it to tighten a nut such that it passes through the pivot point, then torque is
A) Zero✓
B) Fl
C) Fl sin θ
D) Fl sin θλ

6. **If a force of magnitude 8 N acts on a body in direction making an angle 30, its x and y components will be**
A) $F_x = 4\sqrt{3}$ and $F_y = 8$
B) $F_x = 8$ and $F_y\ 4\sqrt{3}$
C) $F_x\ 4\sqrt{3}$ and $F_y = 4$✓
D) $F_x = 8\sqrt{3}$ and $F_y = 4$

7. **The difference of a vector $\overline{B}$ and its negative vector $-\overline{B}$ is**
A) A null vector
B) Equal to magnitude of vector $\overline{B}$
C) Twice the magnitude of vector $\overline{B}$✓
D) Smaller than magnitude of vector $\overline{B}$

8. **Time of projectile's flight is**
A) $\frac{v_i^2 \sin^2\theta}{g}$
B) $\frac{2v_i \sin\theta}{g}$✓
C) $\frac{v_i^2 \sin\theta}{g}$
D) $\frac{v_i^2}{g}\sin\theta$

If the velocity of the body changes by equal amount in equal intervals of time, the body is said to have:
A) variable acceleration
B) uniform acceleration✓
C) uniform velocity
D) negative acceleration

10. **In order to determine the maximum height of the projectile, the equation of motion used is**
A) $aS = v_i^2 - v_i^2$
B) $2aS = v_f^2 - v_i^2$✓
C) $2S = a\left(v_f^2 - v_f^2\right)$
D) $aS = \left(v_f^2 - v_i^2\right)$

11. **If a force of 12 N acts on a car and changes its momentum from 36 kgm/sec to 60 kgm/sec, the time during which this change occurs will be**
A) 24 sec
B) 2 sec✓
C) 12 sec
D) 8 sec

12. **Which one of the following is a non-conservative force?**
A) Electric force
B) Elastic spring force
C) Gravitational force
D) Frictional force✓

Value of escape velocity for the surface of the earth is 11 km/sec. Its value for surface of the moon is
A) 11 km/sec
B) 10.4 km/sec
C) 2.4 km/sec✓
D) 4.3 km/sec

14. **On a clear day at noon, the intensity of solar energy reaching the earth's surface is about**
A) 1.0 kWm^{-2}✓
C) 1.0 Wm^{-2}

15. **When a lift is accelerated upward, the apparent weight of an object in it will be**
A) Equal to its real weight
B) Less than its real weight
C) Zero
D) Greater than its real weight✓

The moment of inertial of a thin rod is
A) $\frac{1}{2}mL^2$
B) $\frac{1}{4}m^3L$
C) $\frac{1}{12}mL$
D) $\frac{1}{12}mL^2$✓

17. **A wheel of radius 1 m covers an angular displacement of 180. Its linear displacement is**
A) 3.14 m✓
B) π rad
C) 6.28 m
D) 0.157 m

18. **Conservation of mass of fluid flow leads to**
A) Bernoulli's equation
B) Venturi meter
C) Equation of motion
D) Equation of continuity✓

19. **The blood vessels collapse when**
A) External pressure applied becomes greater than the systolic pressure✓
B) External pressure applied is equal to systolic pressure
C) External pressure applied is less than the systolic pressure
D) External pressure applied is zero

An oscillating body is at mean position at t = 0. At t = T/4 it will be at
A) Extreme position✓
B) Mean position
C) Between extreme and mean position
D) Beyond extreme position

21. **In a simple pendulum, the tension of the string is**
A) g cos θ
B) mg sin θ
C) mg cos θ✓
D) mg

22. **Two sound waves having the same amplitudes are moving in the same direction are out of phase. The amplitude of the resultant wave is**
A) Zero amplitude✓
B) The sum of amplitude of the two waves
C) Difference of the amplitudes of the two waves
D) Double the amplitude of either wave

A source 'Y' of unknown frequency produces 4 beats with a source of 240 Hz and 8 beats with a sound of 252 Hz. Frequency of the source 'Y' is
A) 244 Hz✓
B) 236 Hz
C) 248 Hz
D) 246 Hz

24. **An organ pipe closed at one end has a length of 25 cm. Wavelength of the fundamental note is**
A) 25 cm
C) 100 cm✓

B) 50 cm
D) 75 cm

25. In Newton ring apparatus, at the point of contact of the lens and glass plate, the additional path difference introduced is
A) λ/4
B) λ/2✓
C) λ
D) λ/3

26. The path difference 'BD' for destructive interference is
A) (m + ½) λ✓
B) mλ
C) d sin θ
D) 3λ

27. In the case of a grafting spectrometer, the resolving power 'R' of the grating is defined as
A) λ / Δλ✓
B) λ / D
C) λ / λ1
D) N x m

Which one of the following lights travels fastest in optical fibers?
A) Visible light
B) Ultraviolet light
C) Ordinary light
D) Invisible infrared light✓

29. The value of universal gas constant is 17
A) 8.314 $Jmol^{-1}K^{-1}$✓
B) 8.324 $Jmol^{-1}K^{-1}$
C) 7.23 $Jmol^{-1}K^{-1}$
D) 1.00 $Jmol^{-1}K^{-1}$

30. The turbine in a steam power plant takes steam from a boiler at 427 °C and exhausts into a low temperature reservoir at 77 °C. What is the maximum possible efficiency?
A) 50%✓
B) 40%
C) 60%
D) 70%

Which one of the following is a postulate of kinetic theory of gases?
A) Molecules do not exert force on each other✓
B) The size of molecules is much larger than separation between the molecules
C) A finite volume of gas consists of a very small number of molecules
D) The gas molecules are not in random motion

32. Which one is not an irreversible process?
A) Slow compression of a gas into a cylinder
B) Changes due to friction✓
C) Explosion
D) Dissipation of energy

33. Electric intensity is a vector quantity and its direction is
A) Perpendicular to the direction of field
B) Opposite to the direction of force
C) At a certain angle
D) Along the direction of force✓

34. The magnitude of an electric field between two separated plates can be calculated by the relation
A) $\Delta V = Ed$✓
B) $\Delta V = E/d$
C) $\Delta V = \frac{E}{q_o}$
D) $E = \frac{d}{\Delta V}$

35. SI unit of electric flux is
A) NmC^{-1}
C) Nm^2C^{-2}✓

B) $Nm^{-2}C^{-2}$
D) Nm^2C^{-2}

The equivalent current which passes from a point at higher potential to a point at a lower potential as if it represented a movement of positive charges is
A) Electronic current
B) Electric current
C) Magnetic lines
D) Conventional current✓

If 'V' is applied potential difference across a resistance 'R', then loss in potential energy per unit time is
A) VI
B) I^2R
C) $\frac{V^2}{R}$
D) All of the above✓

38. The substances like germanium and silicon have
A) Negative temperature coefficients✓
B) Positive temperature coefficients
C) Both A and B
D) None of the above

39. The sensitivity of a galvanometer can be decreased by
A) Increasing magnetic field
B) Increasing number of turns of the coil
C) Increasing $\frac{c}{BAN}$ Ration✓
D) Decreasing length of couple 'c'

60. Force on a current carrying conductor in a uniform magnetic field is
A) F = NIA cos α
B) F = μnI
C) F = ILB sin α✓
D) F = ILA cos α

When the dimensions of both sides of an equation are equal, then the equation is said to be
A) Simultaneous
B) Homologous✓
C) Instantaneous
D) Quadratic

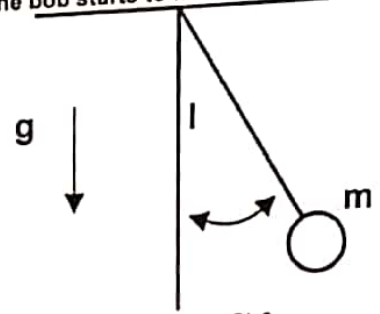
62. Radian is a unit of angular displacement which can also be measured in degrees. How many radians are equal to one degree?
A) $\frac{180}{\pi}$
B) $\frac{\pi}{180}$✓
C) $\frac{2\pi}{180}$
D) $\frac{\pi}{57.3}$

63. An elevator is moving upwards with constant velocity of 'v'. What is a weight of a person of a mass 'm' inside the elevator during upward motion?
A) mg + mv
B) mg✓
C) mg — mv
D) zero

64. An object having spherical shape of radius 'r' experiences a retarding force F from a fluid of co-efficient of viscosity 'η' when moving through the fluid with speed 'v'. What is the ratio of retarding force to speed?
A) $6\pi\eta r^2$
B) $6\pi\eta/r^2$✓
C) $6\pi\eta r$
D) $6\pi\eta/r$

65. When the drag force is equal to the weight of the droplet, the droplet will fall with:
A) High Speed
B) Low Speed
C) Certain acceleration
D) Constant Speed✓

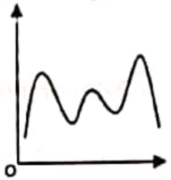
A simple pendulum length 'L' with bob of mass 'm' is slightly displaced from its mean position so that it string makes an angle 'θ' with vertical line as shown in the figure. Then bob of pendulum released. What will be the expression of torque with which the bob starts to move towards the mean position?

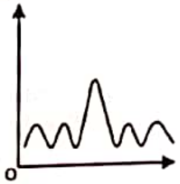


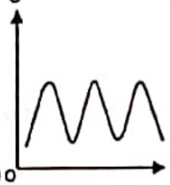
A) mgL
B) **mgL sin θ✓**
C) 0
D) mgL cos θ

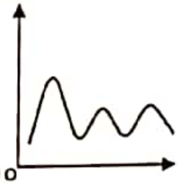
67. **The density of blood is:**
A) Less than water
B) Nearly equal to water✓
C) Greater than water
D) Three times that of water

68. **A monochromatic light of wavelength 'λ' is used to produce the diffraction pattern through a single slit of width X. Which one of the following represents the intensity distribution across the screen?**

A) 

B) 

C) 

D) 

For interference of light waves to take place, the required condition is
A) The path difference of the light waves from the two sources must be large
B) The interfering waves must be non-coherent
C) The light waves may come from different sources
D) The light waves must come from two coherent sources✓

70. **The property of bending of light around an obstacle and spreading of light waves into geometric shadow of an obstacle is called:**
A) Diffraction of Light✓
B) Polarization of Light
C) Quantization of Light
D) Interference of Light

71. **The normal human eye can focus a sharp image of an object on the eye if the**

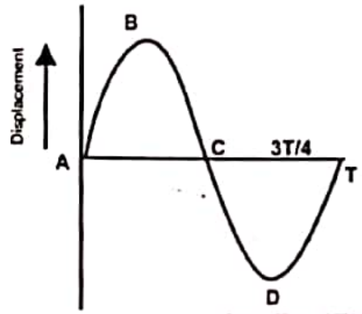
object is located at certain distance called
A) Least Point
B) Near Point✓
C) Far Point
D) Distinct Point

72. **A source of sound wave emits waves of frequency 'f'. If 'v' is speed of sound waves, then what will be the wavelength of the waves**
A) $\frac{v}{f}$✓
B) vf
C) $\frac{v-u_o}{f}$
D) $(v-u_o)f$

The spectrum of a star's light is measured and the wavelength of one of the lines as the sodium's line is found to be 589 nm. The same line has the wavelength of 497 nm when observed in the laboratory. This means the star is
A) Moving away from the earth✓
B) Moving towards the north
C) Stationary
D) Revolving around the planet

74. **What is the period of mass spring system during SHM if the ratio of mass to spring constant is ¼?**
A) π✓
B) 2 π
C) 1/π
D) ½ π

75. **Waveform of SHM is given in figure. At what time/times displacement is equal to zero?**



A) T/4 only
B) 3T/4 only
C) 0, T/4, 3T/4 and T
D) 0, T/2 and T✓

A wire is stretched by a force which causes an extension. The energy is stored in it only when:
A) The extension of wire is proportional to force applied✓
B) The cross-section area of the wire remains constant
C) The wire is not stretched beyond its elastic limit
D) The weight of wire is negligible

77. **Which statement is correct:**
A) Elasticity is that property of body which enables body to regain its original dimension
B) Elasticity is that property of a body that does not allow it to return to its original shape
C) Elasticity is that property of a body that allows it to retain its original shape and dimension after the stress✓

is removed.
D) Elasticity is that property of a body that obeys Hooke's law.

78. **Which of the following is the expression of root mean square speed of a gas having n number of molecules contained in the container?**

A) $\sqrt{\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}}$ ✓
C) $\sqrt{\frac{v_1 + v_2 + ... + v_x}{N}}$
B) $\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}$
D) $\frac{v_1 + v_2 + ... + v_x}{N}$

79. **For a gas of volume V in its equilibrium state, if the pressure does change with time then total kinetic energy of gas is constant because**
A) Collisions between gas molecules occur
B) Collisions between gas molecules occur linearly
C) Collisions must be elastic✓
D) Collisions must be inelastic

Which of the following is the proper way to study the sinusoidal waveform of the voltage?
A) Voltage is connected to X input and the time base is switched off
B) Voltage is connected to Y input and the time base is switched on✓
C) Voltage is connected to Y input and the time base is switched off
D) Voltage is connected to X input and the time base is switched on

81. **The Treaty of European Union (1992) is also known as:**
(A) Treaty of the Hague
(B) Treaty of Brussels
(C) Measurement Treaty✓
(D) None of these

82. **King Abdul Aziz Ibn Saud named the Kingdom of Hejaz and Najd as Saudi Arabia in:**
(A) 1924 (B) 1930
(C) 1932✓ (D) 1936

83. **Under Gandhi-Irwin Pact of 5th March 1931, it was decided that:**
(A) The System of Dyarchy will be abolished
(B) The System of Separate Electorate will be retained for the Muslims
(C) Congress will represent low caste Hindus in the elected bodies
(D) The Congress will call off its Civil Disobedience Movement✓

84. **In the Provincial Elections of 1937, All India Muslim League won largest number of seats in the:**
(A) United Provinces (UP)✓
(B) Sindh Province
(C) Punjab Province
(D) Central Provinces (CP)

85. **When is World Hemophilia Day observed?**
(A) April 16th **(B) April 17th**✓
(C) April 18th (D) April 19th

86. **South Korea's ruling party has won by a landslide in the parliamentary election held in Apr 2020, winning____of the 300 seats of the National Assembly.**
(A) 160 (B) 165
(C) 175 **(D) 180**✓

Who was the last Commander-in-Chief for Ghazwa-e-Mautah?
(A) Hazrat Khalid bin Waleed (R.A)✓ (B) Abdur Rehman bin Auf (R.A)
(C) Abdullah bin Rawaha (R.A)

88. **Whose title is Asad-ullah?**
(A) Omar (R.A) **(B) Ali (R.A)**✓ (C) Usman (R.A)

89. **Marble is a :**
(A) Sedimentary rock (B) Igneous rock
(C) Metamorphic rock✓ (D) None of these

Yardang is produced by:
(A) River (B) Glacier
(C) Wind✓ (D) Volcanic activity

91. **Working under the pressure of time, Raza did not notice his ________ mistake.**
(A) Leisurely, stupid **(B) Rapidly, carelessly**✓
(C) Frantically, inevitable (D) Continually, redundant (excessive)

92. **Even ______ pleasure may leave ______ memories.**
(A) Ephemeral, lasting✓ (B) Emphatic, stalwart
(C) Transitory, fleeting (D) Enigmatic, (puzzling mysterious)

How many acres are there in one hectare?
(A) 2.47✓ (B) 3.47 (C) 4.47 (D) 5.47

94. **Liquids that evaporate quickly are known as ________ liquids.**
(A) Viscous (B) Transient **(C) Volatile**✓ (D) Light

95. **CPU stands for:**
(A) Centre Product Unit (B) Central Programming Unit
(C) Control Program Unit **(D) Central Processing Unit**✓

96. **_______ is secondary storage device.**
(A) CD-ROM✓ (B) ROM (C) Cache (D) RAM

97. **In a box of 48 apples, 8 out of each dozen are good. How many in the box are bad?**
(A) 8 **(B) 16**✓ (C) 12 (D) 19

A father is three times as old as his son. In 10 years, he will twice as old as his son. How old is the father at present?
(A) 30 years✓ (B) 25 years
(C) 20 years (D) None

.99 لفظ 'شر' کا متضاد کیا ہے؟
(A) بھلائی (B) صواب (C) ثواب (D) خیر✓

.100 گیت نگاری میں سب اہم نام کس کا ہے؟
(A) ولی دکنی (B) ساحر لدھیانوی✓ (C) فیض احمد فیض (D) احمد فراز

Paper Code
E

ROLL NO.

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☛ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. A ■ C D

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-5

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **If amplitude of a simple pendulum is increased by 4 times, the time period will be:**
   (A) Four times (B) Half
   (C) Same✓ (D) Two times
2. **Beats can be heard when difference of frequency is not more than:**
   (A) 8 Hz **(B) 10 Hz✓**
   (C) 4 Hz (D) 6 Hz

☛ **When the body moves with constant acceleration, the velocity time graph is:**
   (A) Parabola (B) Hyperbola
   (C) Straight line✓ (D) Curve

4. **A man of mass 5 kg is falling freely, the force acting on it will be:**
   (A) 5 N (B) 9.8 N
   (C) 19.6 N **(D) Zero✓**
5. **Motion of a projectile is:**
   (A) One dimensional **(B) Two dimensional✓**
   (C) Three dimensional (D) Four dimensional
6. **The centripetal acceleration is also called:**
   (A) Tangential **(B) Radial✓**

   (C) Angular (D) Rotational

☛ **The number of spark plugs used in diesel engine is:**
   (A) 0✓ (B) 1
   (C) 2 (D) 3

8. **The distance between two consecutive nodes is:**
   (A) $\frac{\lambda}{2}$✓ (B) $\frac{\lambda}{4}$
   (C) λ (D) 2λ
9. **The direction of vector in space is specified by:**
   (A) 1 - Angle (B) 2 – Angles
   (C) 3 – Angles✓ (D) 4 – Angles

☛ **$1\frac{\text{rev}}{\text{min}}$ is equal to:**
   (A) $\frac{\pi}{6}$ rad s^{-1} (B) $\frac{\pi}{15}$ rad s^{-1}
   (C) $\frac{\pi}{20}$ rad s^{-1} **(D) $\frac{\pi}{30}$ rad s^{-1}✓**

11. **Half wavelength corresponds to:**
    (A) 0° (B) 90°
    (C) 180°✓ (D) 360°
12. **The dimensional unit of impulse is:**
    (A) MLT **(B) MLT^{-1}✓**
    (C) $ML^{-1}T^{-1}$ (D) $M^{-1}L^{-1}T^{-1}$

☛ **Heat is form of:**
    (A) Power **(B) Energy✓**
    (C) Momentum (D) Torque

14. **The distance covered by wave in 1 sec. is:**
    (A) Wave number **(B) Wavelength✓**
    (C) Frequency (D) Wave speed
15. **Unit of momentum in S.I. system is:**
    (A) N – m (B) N – m^2
    (C) N^2 – m **(D) N - s✓**
16. **Magnifying power of telescope is:**
    (A) $\frac{F_e}{F_o}$ **(B) $\frac{F_o}{F_e}$✓**
    (C) $f_e f_o$ (D) $\frac{1}{F_e F_o}$
17. **Original source of energy for biomass is:**
    (A) Earth (B) Moon
    (C) Sun✓ (D) Star

☛ **Sound travels faster in:**
    (A) CO_2 **(B) H_2✓**
    (C) O_2 (D) He

19. Significant figures in 0.0010 are:
(A) 1 (B) 2✓
(C) 3 (D) 4

20. The dimensions of viscosity are:
(A) $M^2L^{-1}T^{-2}$ (B) $M^{-1}LT^{-1}$
(C) $M^{-1}L^{-1}T$ (D) $ML^{-1}T^{-1}$✓

21. Angle between ray of light and wavefront is:
(A) 0° (B) 60°
(C) 90°✓ (D) 120°

The dimensions of angular velocity are:
(A) $[LT^{-1}]$ (B) $[LT^{-2}]$
(C) $[L^{-1}T]$ (D) $[T^{-1}]$✓

23. In the relation $F = 6\pi\eta r v$. Dimension of coefficient of viscosity η is:
(A) $[ML^{-1}T^{-1}]$✓ (B) $[MLT^{-1}]$
(C) $[ML^{-2}T^{-1}]$ (D) $[MLT]$

24. If $\vec{A} = 2\hat{i} + \hat{j} + 2\hat{k}$ then |A| is:
(A) Zero (B) 3✓
(C) 5 (D) 9

The trajectory of a projectile is:
(A) Circle (B) Parabola✓
(C) Hyperbola (D) Straight line

26. SI unit of impulse is:
(A) Kg ms^{-1} (B) N.m
(C) N.S✓ (D) Nm^2

27. Work done will be maximum when angle between $\vec{F}$ and $\vec{d}$ is:
(A) 180° (B) 90°
(C) 60° (D) 0°✓

28. The S.I unit of angular displacement is:
(A) Metre (B) Kilometre
(C) Radian✓ (D) Centimetre

The rate of change of angular velocity is called:
(A) Angular velocity (B) Angular acceleration✓
(C) Angular displacement (D) Angular speed

30. The value of 'g' at the centre of the earth is:
(A) Infinite (B) 2 g
(C) 3 g (D) Zero✓

31. The systolic pressure of a normal healthy person is:
(A) 120 torr✓ (B) 1250 torr
(C) 115 torr (D) 130 torr

The relation between time period and frequency is:
(A) $f = 2\pi T$ (B) $F = \dfrac{1}{2\pi T}$
(C) $f = \dfrac{T}{2\pi}$ (D) $fT = 1$✓

33. The velocity of sound in vacuum is:

(A) Zero✓ (B) 332 m/s
(C) 280 m/s (D) 330 m/s

34. The velocity of sound is greatest in:
(A) Steel✓ (B) Air
(C) Iron (D) Water

35. The distance between two adjacent bright or dark fringes is:
(A) $\Delta y = \dfrac{L\lambda}{d}$✓ (B) $\Delta y = \dfrac{\lambda}{d}$
(C) $\Delta y = \dfrac{\lambda}{Ld}$ (D) $\Delta y = L\, d\lambda$

36. Speed of sound in aluminium at 20°C is:
(A) 3600 m/s (B) 5100 m/s✓
(C) 5130 m/s (D) 5500 m/s

The distance of near point from the eye is about:
(A) 25 cm✓ (B) 25 dm
(C) 10 cm (D) 2.5 cm

38. The value of Boltzmann's constant is:
(A) 1.38×10^{-23} J/K✓ (B) $1.38 \times 10^{+23}$ J/K
(C) 1.38×10^{-23} J/mol – K (D) 1.38×10^{-23} J/K mole – K

39. Triple point of water is:
(A) 273.16°F (B) 273.16°C
(C) 273.16K✓ (D) 373.16K

If the tension of a stretched string is made four times then the velocity of wave:
(A) Remains same (B) Is halved
(C) Becomes twice✓ (D) Becomes 4 times

41. The highest value reached by voltage or current in one cycle is called:
(A) Peak to peak value (B) Peak value✓
(C) Instantaneous value (D) Root mean square value

42. The radius of atom is of the order of:
(A) 10^{10} m (B) 10^{-10} m✓
(C) 10^{-14} m (D) 10^{14} m

43. Conversion of A.C. into D.C. is called:
(A) Modulation (B) Amplification
(C) Oscillation (D) Rectification✓

The electric field created by positive charge is:
(A) Radially outward✓ (B) Radially inward
(C) Circular (D) Zero

45. The direction of induced current is always so as to oppose the change which causes the current is:
(A) Faraday's law (B) Lenz's law✓

(C) Ohm's law (D) Kirchoff's 1st rule

46. The ratio of applied stress to volumetric strain is called:
(A) Young's modulus (B) Shear modulus
(C) Bulk modulus✓ (D) Tensile modulus

Tolerance for silver band is:
(A) ± 10%✓ (B) ± 15%
(C) ± 20% (D) ± 25%

48. The number of protons in an atom is always equal to number of:
(A) Electrons✓ (B) Neutrons
(C) Positron (D) Mesons

49. Which of the following series lies in the ultraviolet region:
(A) Lyman series✓ (B) Balmer series
(C) Pfund series (D) Bracket series

50. The torque on Current Carrying Coil is:
(A) τ = NIAB Cos α (B) τ = BIL Sin α
(C) τ = NIAB Sin α (D) τ = BIL Cos α

51. In 1905, the special theory of relativity was proposed by:
(A) Maxwell (B) de-Broglie
(C) Bohr (D) Einstein✓

The anode in the CRO:
(A) Controls no. of waves (B) Controls brightness of spot formed
(C) Accelerates and focus the beam✓ (D) At negative potential with respect to cathode

53. A potential barrier of 0.7 volt exist across p-n junction made from:
(A) Silicon✓ (B) Germanium
(C) Indium (D) Gallium

54. Presence of dielectric always:
(A) Increases the electrostatic force (B) Reduces the electrostatic force✓
(C) Does not affect the electrostatic force (D) Doubles the electrostatic force

55. In pure resistive A.C. circuit, instantaneous value of voltage or current:
(A) Current lags behind voltage (B) Current leads voltage by $\frac{\pi}{2}$
(C) Both are in phase✓ (D) Voltage leads current by $\frac{\pi}{2}$

Which one of the following requires a material medium for their propagation:
(A) Heat waves (B) X-rays
(C) Sound waves✓ (D) Ultraviolet rays

57. Electric current produces magnetic field was suggested by:
(A) Faraday (B) Oersted✓
(C) Henry (D) Lenz

58. The device which allows only the continuous flow of an A.C. through a circuit is:
(A) Capacitor✓ (B) Inductor
(C) D.C. motor (D) Battery

A pair of quark and antiquark makes:
(A) Meson✓ (B) Baryon
(C) Photon (D) Proton

60. When a p-n junction is reverse biased, the depletion region is:
(A) Widened✓ (B) Narrowed
(C) Normal (D) No change

61. For the computation of electric flux, the surface area should be:
(A) Flat✓ (B) Curved
(C) Inclined (D) Spherical

62. If the motor is overloaded, then the magnitude of "Back emf":
(A) Increases (B) Decreases✓
(C) Constant (D) Becomes zero

When a stress changes the shape of a body, it is called:
(A) Volumetric stress (B) Shear stress✓
(C) Tensile stress (D) Compressional stress

64. The graphical representation of Ohm's law is:
(A) Hyperbola (B) Ellipse
(C) Parabola (D) Straight line✓

65. Which of the following have no charge:
(A) α-ray (B) β-ray
(C) γ-ray (D) Cathode rays

66. A positron is an antiparticle of:
(A) Proton (B) Electron✓
(C) Neutron (D) Photon

67. When a small resistance is connected parallel to the galvanometer, the resulting is:
(A) Voltmeter (B) Wheatstone bridge
(C) Ammeter✓ (D) Potentiometer

The momentum of he moving photon is:
(A) Zero (B) P = hλ
(C) $P = \frac{h}{\lambda}$✓ (D) $P = \frac{\lambda}{h}$

69. One Weber is equal to:

(A) NA^{-1} (B) $Nm^{-1}A$
(C) NmA^{-1}✓ (D) $Nm^{-1}A^{-1}$

70. The central region of a transistor is called:
(A) Base✓ (B) Emitter
(C) Collector (D) Neutral

71. SI unit of electric flux is:
(A) $N-mC^{-2}$ (B) $N-m^2C^{-1}$✓
(C) $N-Cm^{-2}$ (D) $N-C^2m^{-2}$

☞ At high frequency, the current through a capacitor of A.C. circuit will be:
(A) Large (B) Small✓
(C) Infinite (D) Zero

73. Joule-second is the unit of:
(A) Energy (B) Heat
(C) Planck's constant✓ (D) Work

74. Which one of the following is not present in A.C. generator:
(A) Armature (B) Magnet
(C) Slip rings (D) Commutator✓

75. If the medium between the charges is not free space then electrostatic force will:
(A) Increase (B) Decrease✓
(C) Remain same (D) None of these

☞ A particle carrying a charge of 2e falls through potential difference of 3v. Energy acquired by it is:
(A) 9.6×10^{-16} J (B) 9.6×10^{-20} J
(C) 9.6×10^{-15} J (D) 9.6×10^{-19} J✓

77. The substance having negative temperature co-efficient is:
(A) Carbon✓ (B) Iron
(C) Tungsten (D) Gold

78. The SI unit of magnetic induction tesla is equal to:
(A) $NA^{-1}m^{-1}$✓ (B) $NA\,m^{-1}$
(C) $NA^{-1}m$ (D) $NA^{-2}m^{-1}$

79. Cathode ray oscilloscope works by deflecting a beam of:
(A) Neutrons (B) Protons
(C) Electrons✓ (D) Positrons

☞ The most common source of an A.C. voltage is:
(A) Motor (B) Cell
(C) Generator✓ (D) Thermocouple

81. Headquarter of the African Union (AU) is located in:
(A) Johannesburg (B) Cairo
(C) Dakar
(D) Addis Ababa✓

82. Which of the following Indian Nobel Prize winners is associated with economics?
(A) V.S Naipaul
(B) Amartya Sen✓
(C) C.V. Roman
(D) Rabindranath Tagore

83. The Indian Muslims observed 'Day of Deliverance' after the RESIGNATION of Congress Ministries on:
(A) 12 September, 1939
(B) 22 September, 1939
(C) 12 December, 1939
(D) 22 December, 1939✓

☞ Chaudhri Rehmat Ali first used the word 'Pakistan' in his pamphlet 'Now or Never' in:
(A) 1933✓ (B) 1935
(C) 1937 (D) 1938

85. The South Korean general election, in which the electoral reforms gave 18 year olds the vote for the first time, were held on_____.
(A) Apr 13, 2020 (B) Apr 14, 2020
(C) Apr 15, 2020✓ (D) Apr 16, 2020

86. Pakistani-American doctor and a state senator for Connecticut who helped develop a ventilator device that makes it possible to treat seven COVID-19 patients at once is:
(A) Dr Imtiaz Hussain
(B) Dr Saud Anwar✓
(C) Dr Ejaz Khan
(D) Dr Shahid Anwar

87. Who was born inside Kaaba?
(A) Zaid (R.A) (B) Usman (R.A)
(C) Ali (R.A) ✓

88. Ali (R.A) was married to Fatima (R.A) in?
(A) 5 Hijrah (B) 2 Hijrah✓
(C) 4 Hijrah

89. Continental glacier produces the following feature on the Earth surface:
(A) V-shaped valley (B) U-shaped valley
(C) Hanging valley (D) None of these✓

☞ The deepest point in the ocean bottom is in:
(A) Indian ocean (B) Atlantic ocean
(C) Pacific ocean✓ (D) Arctic ocean

91. A man starts climbing a hill. Every minute he ascends 20 meters but slips down 5 meters. How long will he take to ascend a point 80 meters high?
(A) 5 minute✓ (B) 5.20 sec.
(C) 4.80 se(C) (D) None

92. How many hours will it take a jet plane to travel 400 km at a speed of 600 km per hour?

(A) 2 hours (B) 2/3 hours✓
(C) 3/2 hours (D) 1/3 hours

93. **Anyone familiar with the facts could ______ his arguments, which seemed logical but were actually:**
(A) Refute, specious✓
(B) Support, protracted
(C) Repeat, recumbent (lying down)
(D) Review, cogent

By next July, I ______ in this office for ten years.
(A) will work (B) worked
(C) shall be worked
(D) shall have been working✓

95. **If a ship travels from fresh water to a sea or ocean, it will:**
(A) Rise a little higher✓
(B) Sink completely
(C) Sink a little lower
(D) Remain unaffected

96. **Which one of the following fruits / vegetables is a good source of potassium?**
(A) Beetroot **(B) Bananas✓**
(C) Sweet potatoes (D) Spinach

97. **______ is secondary storage device.**
(A) Hard disk drive
(B) CD-ROM drive
(C) Tape drive **(D) All✓**

The device driver is an example of:
(A) Application Software
(B) System Software✓
(C) Freeware
(D) Shareware

99. غزل کے کس شعر میں سے شاعر اپنے تخلص استعمال کرتا ہے؟
(A) درمیان والا شعر (B) مطلع
(C) مطلع ثانی **(D) مقطع✓**

100. مرزا غالب نے وفات کہاں پائی؟
(A) پانی پت✓ (B) آگرہ
(C) دہلی (D) لکھنو

Paper Code F	PUBLIC SERVICE COMMISSION Time Allowed: Two Hours Maximum Marks: 100	ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

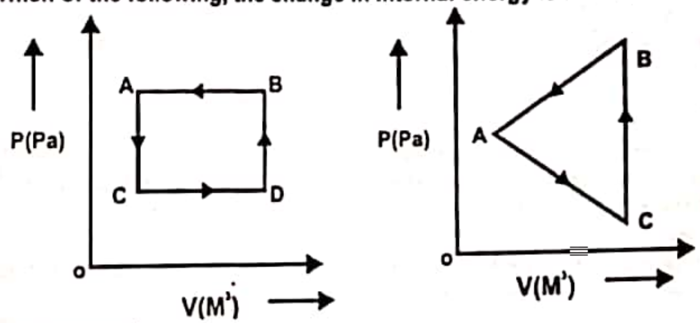
NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-6

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Electron gun in cathode ray oscilloscope contains**
A) Filament, cathode, grid, anodes✓ C) Emitter, base, collector
B) Cathode, anode, capacitor, screen D) Resistance, capacitor, inductor

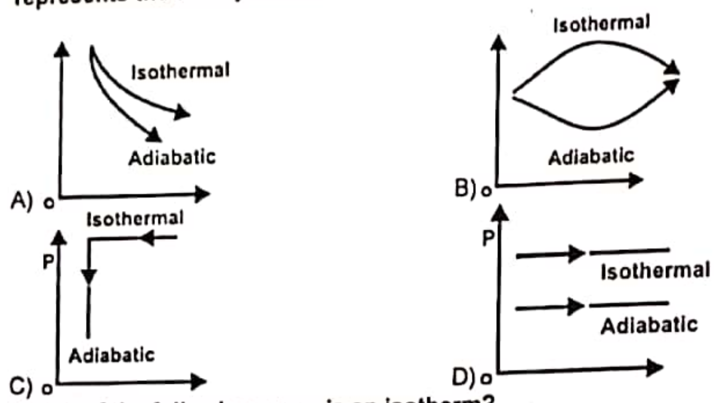
2. **In which of the following, the change in internal energy is more?**



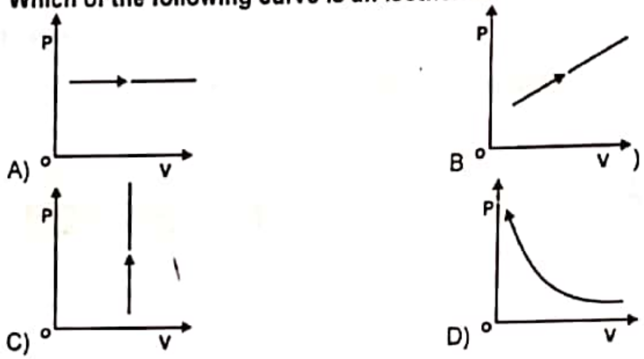
A) In system A
B) In system B

C) Cannot be predicted
D) Change is zero in both. (both are cyclic) ✓

☞ **Pressure volume graph of two systems 'A' and 'B' are plotted under isothermal and adiabatic conditions. Which of the following observation of graph represents the two systems?**



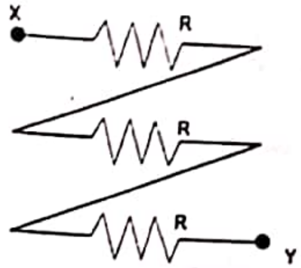
4. **Which of the following curve is an isotherm?**



5. **If 2 A current passes through a resistor when connected to a certain battery. If the resistance is replaced by the double resistance, then the current will become**
A) 2 A
B) 4 A
C) 6 A
D) 1 A✓

☞ **In Helium-Neon laser, population inversion of _________ atoms is achieved which emit radiations, when they are stimulated to fall at lower level.**
A) Neon✓
B) Helium
C) Helium and Neon
D) Chromium

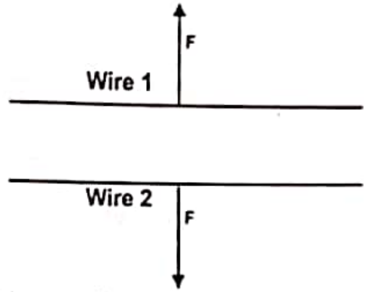
7. **Three resistors each having value 'R' are connected as shown in figure. What is the equivalence resistance between 'X' and 'Y'?**



A) 3R✓
B) R
C) R/3
D) R^3

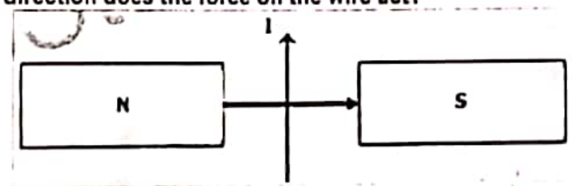
☞ **If the number of turns of a solenoid circular coil is doubled, but the current in the coil and radius of the coil remains same, then what will be the m gnetic flux density produced by the coil?**
A) Magnetic flux density will be halved
B) Magnetic flux density increases by different amount at different points
C) Magnetic flux density remains unchanged
D) Magnetic flux density will be doubled✓

9. **Two long parallel wires Wire 1 and Wire 2 repel each other as shown in the figure. What could be the reasons?**



A) Both carry current in same direction
B) Both carry current in opposite direction✓
C) Wire 1 has current, but Wire 2 has no current
D) Wire 2 has current, Wire 1 has no current

☞ **The diagram shows a wire, carrying a current 'I', placed the poles of a magnet: In which direction does the force on the wire act?**



A) Upwards
B) Downwards✓
C) Towards the 'N" pole of the magnet

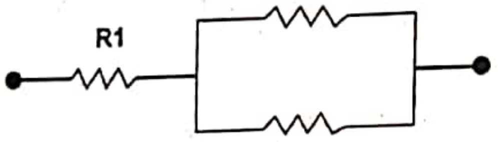
D) Towards the 'S' pole of the magnet

11. **Wavelength of X-rays is the order of:**
A) 10^{-8} m
B) 10^{-10} m✓
C) 10^{-13} m
D) 100 m

Laser beam can be used to generate three-dimensional image of object in a process called:
A) Computed technology
B) Computed tomography
C) Holography✓
D) Computerized axial tomography

13. **Which of the following is true for Lasers?**
A) Electrons are emitted
B) Stimulated emission of electrons is needed
C) Coherent monochromatic light is emitted
D) There is a population inversion of photons✓

14. **Three resistors of resistance R1, R2 and R3 are connected as shown in figure. Equivalence resistance is:**



A) $R_1 + R_2 + R_3$
C) $\frac{R_1R_2 + R_2R_3 + R_2R_3}{R_1 + R_2}$ ✓
C) $\frac{R_1 + R_2 + R_3}{R_1R_2}$
D) $\frac{R_1R_2R_3}{R_1R_2}$

What is meant by spontaneous emission of electrons in solids?
A) Electrons being emitted by the solids through photoelectric effect when irradiated with electromagnetic radiation
B) Incident electrons colliding with electrons in solids and releasing doubling the number of incident electrons
C) Electrons in solids are emitted without any external stimulus through radiation
D) Excited electrons going back to lower energy states immediately by releasing energy. ✓

16. **When electrons lose all their kinetic energy in the first collision, the entire kinetic appears as an X-ray photon of energy:**
A) K.E = eV✓
B) K.E = $\frac{\lambda_{min}}{hc}$
C) K.E = $\frac{hc}{\lambda_{min}}$
D) K.E = $\frac{hc}{\lambda_{max}}$

17. **The characteristic X-ray spectrum is due to:**
A) The absorption of neutrons by target material
B) The bombardment of target material by protons

C) The bombardment of target material by electrons✓
D) The bombardment of target material by alpha particles

18. **Ionizing capability of gamma rays is:**
A) Equal to alpha and beta particle
B) Less than alpha but greater than beta particles
C) Less than both alpha and beta particles✓
D) Less than beta but greater than alpha particles

Half-life of a radioactive element is:
A) Inversely proportional to square of decay constant
B) Directly proportional to square of decay constant
C) Directly proportional to decay constant
D) Inversely proportional to decay constant✓

20. **The transformation of a neutron into proton in the nucleus gives rise to emission of:**
A) Beta particles✓
B) Alpha particles
C) Gamma particles
D) X-rays

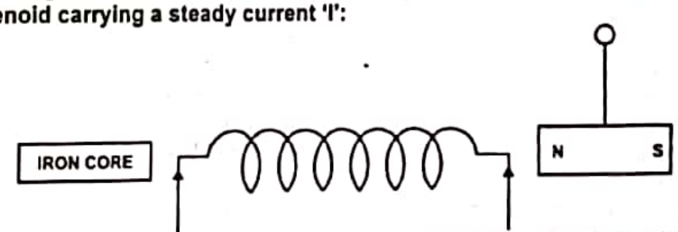
21. **The ratio of the rate of decay of a parent atom to the number of radioactive nuclei present at that time is equal to:**
A) Half-life of radioactive element
B) Mean life
C) Decay constant of radioactive element✓
D) Activity if radioactive element

22. **Which one of the following particle is emitted as a result of nuclear reaction?**
$Ra^{226} \longrightarrow Rn^{222}$
A) Beta
B) Alpha✓
C) Gamma rays
D) One alpha and one beta

Which of following is used to estimate the circulation of blood in a patient?
A) Carbon-14
B) Carbon-12
C) Phosphorus-32
D) Sodium-24✓

24. **For the radiotherapy of a patient, it is required to double the absorbed dose in gray. What step must be taken?**
A) Energy must be quadrated
B) Energy must be halved
C) Energy must be raised four times
D) Energy must be doubled✓

25. **The diagram shows a small magnet hanging on a thread near the end of a solenoid carrying a steady current 'I':**

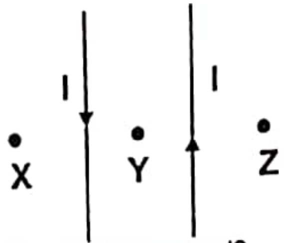


What happens to the magnet as the iron core is inserted into the solenoid?

A) It moves towards solenoid and rotates through 180°
B) It moves towards the solenoid✓
C) It moves away from solenoid
D) It moves away from solenoid and rotates through 180°

26. **A 10 cm long solenoid has 100 turns. What will be the magnetic field inside it along its axis if one micro ampere current is passed through it?**
A) $4\pi \times 10^{-13}$ tesla
B) $4\pi \times 10^{-7}$ tesla
C) $4\pi \times 10^{-10}$ tesla✓
D) $4\pi \times 10^{-16}$ tesla

27. **Two long straight parallel wires held vertically have equal but opposite currents as shown in the figure.**



Which of the following effect will be observed?
A) Magnetic field at 'X' is stronger than that at 'Y' and 'Z'✓
B) Magnetic field at 'X' is weaker than that at 'Y' and 'Z'
C) Magnetic field at 'X', 'Y' and 'Z' is same
D) Magnetic field at 'X' is weaker than that at 'Y' but stronger than that at 'Z'.

The kinetic energy K.E. with which the electron strikes the target is given by:
A) K.E. = e^2V
B) K.E. = hc/λ
C) K.E. = hf^2
D) K.E. = eV✓

29. **LASER is an acronym for:**
A) Light amplification by stimulated emission of radiation✓
B) Light annihilation by stimulated emission of radiation
C) Light amplitude of stimulated emission of radiation
D) Light amplification by stimulated emission of radio

30. **X-rays can be produced by bombardment of ________ on target metal:**
A) Protons
B) Electrons✓
C) Neutrons
D) Alpha particles

31. **Laser light is monochromatic which means**
A) It consists of one ray of light
B) It consists of one wavelength✓
C) It consists of carbon monoxide gas
D) It consists of photons having 1 eV energy

If an electron in the 'K' shell is removed and an electron from 'L' shell jumps to occupy the hole in the 'K' shell, it emits a photon of energy:
A) $hf_{K\alpha} = E_L - EK$✓
B) $hc = E_L - EK$
C) $h/\lambda_{K\alpha} = E_L - E_K$
D) $hf_{K\alpha} = E_K - E_L$

33. **Which of the following property must be there in a substance so that it can be used as target in X-ray tube?**
A) It must have low melting point
C) It must have high reflecting ability

B) It must have low atomic number
D) It must have high atomic number✓

34. **Which of the following can be used to produce population inversion for the emission of Laser?**
A) Optical pumping✓
B) Optical fibre
C) Optical instrument
D) Optical polarization

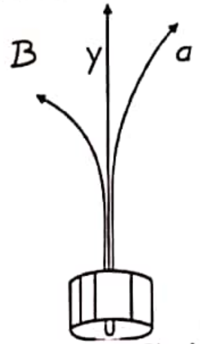
35. **What is the charge on alpha particles emitted during the phenomenon of radioactivity?**
A) +e
B) –e
C) –2e
D) +2e✓

36. **A radioactive nuclide decays by emitting an alpha particle, a beta particle and a gamma ray photon, the change in the nucleon number will be:**
A) -4✓
B) -1
C) -2
D) -3

A half-life of sodium-24 is ________ which is used to estimate the volume of blood in a patient:
A) 6 hours
B) 15 hours✓
C) 8 hours
D) 15 days

38. **Which of the following is unit of absorbed dose?**
A) Sievert
B) Gray✓
C) Roentgen
D) Curie

39. **In a radioactive phenomenon observation shown in figure where α deviates lesser than β in some electric or magnetic field (not shown in figure). What is the reason of less deviation of α?**



A) α is charged particle
B) α is neutral particle
C) α is heavier particles✓
D) α is lighter particle

40. **The isotope of Iodine-131 is used in the treatment of**
A) Blood cancer
B) Bone cancer
C) Lung tumor
D) Thyroid cancer✓

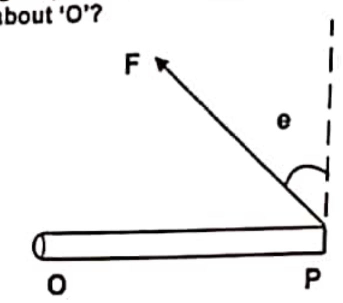
Which of the following effect is observed due to emission of β^- during the phenomenon of radioactivity?
A) A increases by 1 and Z remains same
B) Z increases by 1 and A remains same✓

C) Z decreases by 1 and A remains same
D) A decreases by 1 and Z remains same

42. Electric charge on an object is measured as 5 micro coulombs. How the value of this charge can be expressed in terms of base units:
A) 5 x 100 ampere second
B) **5 x 10^{-6} ampere second✓**
C) 5 x 10^{+6} coulomb second
D) 5 x 100 coulomb second

43. If 'm' is the mass, 'c' is the velocity of light and x = mc^2, then dimensions of 'x' will be:
A) $[LT^{-1}]$
B) **$[ML^2T^{-2}]$✓**
C) $[MLT^{-1}]$
D) $[MLT^{-2}]$

44. A force 'F' is acting at point 'P' of a uniform rod capable to rotate about 'O'. What is the torque about 'O'?



A) (OP)(F tanθ)
B) (OP)(F)
C) (OP)(F sinθ)
D) **(OP)(F cosθ) ✓**

An object of mass 'm' is suspended in an elevator moving downward with acceleration equal to acceleration due to gravity. What is the apparent weight of object?
A) **Zero✓**
B) 2mg
C) mg
D) $\frac{mg}{2}$

46. Stokes' Law for steady motion in a fluid of infinite extent is given by
A) **F = 6πηrv✓**
B) F = (4/3)πr^3ρg
C) F = 6πηr^2ρ
D) F = 2gr^2ρ/9η

47. If speed of efflux through a small hole in a large tank is 9.8 m/s. Find the height at the fluid above the hole
A) 1 m
B) 9.8 m
C) **4.9 m✓**
D) 19.6 m

Flow speed of the fluid through a non-uniform pipe increases from 1 m/sec to 3 m/sec. If change in P.E. is zero, then pressure difference between two points will be: (density of the fluid = 1000 kg/m^3)
A) 1000 N/m^2
B) 9000 N/m^2
C) 8000 N/m^2
D) **4000 N/m^2✓**

49. Polarization of light exhibited the nature of light as
A) Longitudinal wave
B) Compressional wave
C) **Transverse wave✓**
D) Electromagnetic wave

The concentration of a sugar solution can be determined by
A) Un-polarized light
B) **Plane polarized light✓**
C) Interference of light
D) Diffraction of light

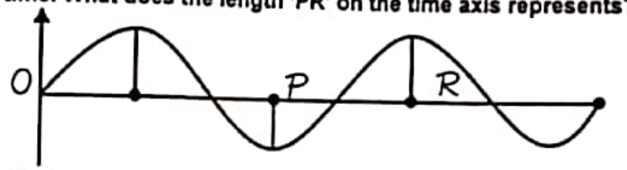
51. The information from one place to another can be transmitted very safely and easily by:
A) Copper wire
B) Aluminium wire
C) Photodiode
D) **Optical fibre✓**

52. The image of an object placed inside the focal length of a convex lens will be largest and clearest when it is at the
A) Less than 25 cm
B) **Near point✓**
C) Greater than 25 cm
D) Infinity

53. A simple harmonic oscillator has a time period of 10 seconds. Which equation rotates its acceleration 'a' and displacement 'x'?
A) a = -2x
B) a = -(20π)x
C) $a = -\left(\frac{2\pi}{10}\right)^2 x$ ✓
D) a = $-(20\pi)^2$ x

When the length of a simple pendulum is doubled, find the ratio of the new frequency to the old frequency?
A) 1/4
B) 1/2
C) $\sqrt{2}$
D) **$1/\sqrt{2}$ ✓**

55. In the diagram below, the displacement of an oscillating particle is plotted against time. What does the length 'PR' on the time axis represents?



A) Twice the frequency
B) **Half the period✓**
C) Half the frequency
D) Twice the period

56. When the source of sound moves towards the stationary observer, the value of apparent frequency 'fo' is:
A) $f_o = \left(\frac{v+u_i}{v}\right)f$
B) $f_o = \left(\frac{v}{v-u_i}\right)f$ ✓
C) $f_o = \left(\frac{v}{v+u_i}\right)f$
D) $f_o = \left(\frac{v-u_i}{v}\right)f$

57. The ratio of tensile strength to tensile strain is called
A) Modulus of elasticity
B) Bulk Modulus
C) **Young's Modulus✓**
D) Shear Modulus

A wire is stretched by a force 'F' which causes an extension Δl, the energy stored in the wire is:
A) FΔl
C) ½ FΔl^2

B) $2F\Delta l$

D) ½ $F\Delta l$✓

59. H_2 and O_2 both are at thermal equilibrium at temperature 300 K. Oxygen molecule is 16 times massive than hydrogen. Root mean square speed of hydrogen is

A) 4 root mean square of oxygen✓
B) ¼ root mean square of oxygen
C) 1/16 root mean square of oxygen
D) 1/6 root mean square of oxygen

60. Which of the following is expression of mean square speed of 'N' gas molecules contained in a cylinder?

A) $\frac{v_1 + v_2 + ... + v_x}{N}$ ✓
B) $\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}$
C) $\sqrt{\frac{v_1 + v_2 + ... + v_x}{N}}$
D) $\sqrt{\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}}$

If 'Q' is the amount of heat supplied to a system and 'W' is the work done, then change in internal energy can be defined as

A) Q/W
B) Q – W✓
C) W/Q
D) 1 + Q/W

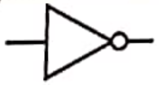
62. A heat engine operating according to second law of thermodynamics rejects one fourth of the heat taken from high temperature reservoir. What is the percentage efficiency of heat engine?

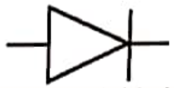
A) 100%
B) 25%
C) 50%
D) 75%✓

63. First law of thermodynamics under adiabatic conditions can be mathematically written as:

A) Q = W
B) $Q = \Delta U$
C) Q = U + W
D) $W = -\Delta U$✓

64. What is the logic symbol for a NOT Gate?



The voltage that is applied across X-plates is provided by a circuit called

A) Audio generator
B) Time base generator✓
C) Signal generator
D) Linear generator

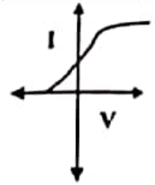
66. What will be the effect on the capacitance of a capacitor if area of each plate is doubled while separation between the plates is halved?

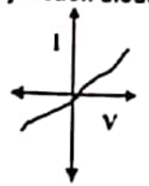
A) Capacitance remains same
B) Capacitance becomes double
C) Capacitance becomes four times✓
D) Capacitance reduces to half

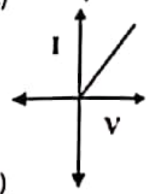
67. 10 V potential difference is applied across the plate of 1 μF capacitor. What is the energy storied in capacitor?

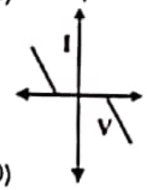
A) 0.5 mJ
B) 0.05 mJ✓
C) 5 mJ
D) 50 mJ

68. Which one of the following is I-V curve of a junction diode?

A)


B)


C)


D)


A 1.25cm diameter cylinder is subjected to load of 2500kg, stress on bar is:

A) 200 Pa
B) 2×10^5 Pa✓
C) 2×10^6 Pa
D) 2×10^9 Pa

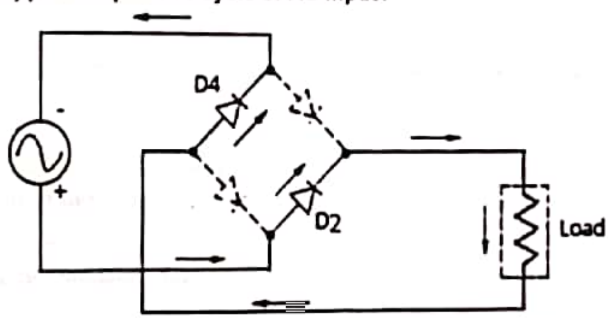
70. Output voltage of rectifier is not smooth, it can be made smooth by a circuit known as:

A) Wheatstone Circuit
B) Bridge circuit
C) Filter circuit✓
D) Ripple circuit

71. A wire of length 2m is attached with mass of 5kg vertically, tensile strain of wire is 0.3×10^{-3}, the extension in wire is:

A) 1.5 mm
B) 2mm
C) 0.5 mm
D) 0.6 mm✓

72. What happens in positive cycle of AC input?



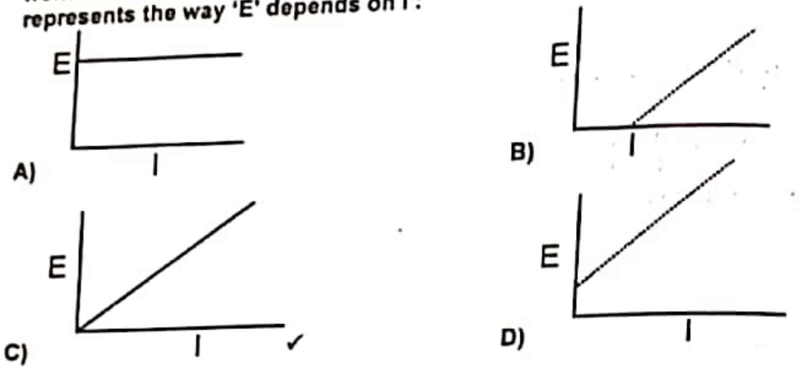
A) D_1 and D_3 conducts
B) D_1 and D_2 conducts
C) D_3 and D_4 conducts
D) D_2 and D_4 conducts✓

If signal is applied to input of non-inverting amplifier through resistance of 100 kOhm, and the value of feedback resistance is 10kOhm, the gain is:

A) 11
B) 10
C) 1.1✓
D) 0.11

74. The frequency of photon having momentum 4.42×10^{-28} Ns is:
A) 2.00×10^{15} hZ✓
B) 2.00×10^{14} HZ
C) 5.00×10^{16} hZ
D) 2.00×10^{18} Hz

76. The max K.E, 'E' of photoelectrons ejected by a light of certain wavelength from a metal is measured as a function of intensity 'I' of light. Which graph represents the way 'E' depends on I':



77. The momentum of wave where wavelength 1.32×10^{-9} m:
A) 5.00×10^{-25} Ns
B) 5.00×10^{-26} Ns
C) 5.00×10^{-43} Ns
D) 5.00×10^{-44} Ns

Ionization energy of hydrogen atom is:
A) 0.54 eV
B) 0.85 eV
C) 3.39 eV
D) 13.6 eV✓

79. Complete the equation:

$$^{?}_{?}Z \rightarrow ^{1}_{b} Y + Y$$

A) $^{a}_{b+1}Z$
B) $^{a+1}_{b-1}Z$
C) $^{a}_{b}Z$ ✓
D) $^{a+1}_{b+1}Z$

80. The quantity of uranium is 400g, the amount of uranium left after 3 half lives is:
A) 25g
B) 50 g✓
C) 100g
D) A 200 g

81. When was the first Nobel Prize awarded?
(A) 1892 (B) 1900 (C) 1901✓ (D) 1904

82. The Presidency of the United Nations Security Council rotates (in alphabetical order) among its members every:
(A) 6 months (B) 3 months (C) 2 months (D) Month✓

83. When did Quaid-i-Azam say that "Hindu India and Muslim India parted forever"?
(A) When Congress launched non-cooperation movement in 1920
(B) When Congress rejected his proposed modification in the Nehru Report 1928✓
(C) After failure of Third Round Table Conference in 1932
(D) Whe the Lahore Resolution was passed on 23rd March 1940

By "Satyagraha", Gandhi appealed for:
(A) Boycotting English/foreign goods (B) Hunger strike till death

(C) Civil disobedience✓ (D) Social ostracism

85. Ocean researchers have found the world's "longest animal ever, 150ft long" in deep sea canyon off Australian coast. The name of the animal is_____.
(A) Siderophore (B) Siphonophore✓
(C) Sirhonophore (D) Physlia

86. Who has been named as The Leading Cricketer in the 2020 edition of Wisden's Cricketers' Almanack?
(A) Babar Azam (B) Eoin Morgan
(C) Virat Kohli (D) Ben Stokes✓

87. Africa was conquered in the reign of?
(A) Omar (R.A) (B) Usman (R.A)✓ (C) Ali (R.A)

Hazrat Usman (R.A) migrated?
(A) Thrice (B) Once (C) Twice✓

89. Corpse of Usman (R.A) remained unburied for?
(A) 3 days✓ (B) 5 days
(C) 1 days

90. The flat ocean bottom lying near the continents is called:
(A) Peneplain (B) Archipelagic apron
(C) Lacustrine plain (D) None of these✓

91. Benguela current flows near the western coast of:
(A) Australia (B) South America
(C) Plain✓ (D) None of these

x + x + x =?
(A) 3x✓ (B) x^3 (C) $3x^3$ (D) $x^2 + x$

93. If $2^x = 32$ then x = ?
(A) 5✓ (B) 6 (C) 4 (D) 16

94. She_____ of marrying Saleem when she discovered he was already married.
(A) had thought (B) was thinking✓
(C) was being thought (D) thought

95. I don't like milk, so I ____ tea for breakfast.
(A) generally take✓ (B) am generally taking
(C) was generally taking (D) had generally taken

96. What is the chemical name of bleaching powder?
(A) Calcium Hypochlorite✓ (B) Calcium Chlorate
(C) Calcium Chloride (D) Chlorine

97. _______ is input device.
(A) Keyboard (B) Touchpad
(C) Microphone (D) All✓

_______ is not an example of input device.
(A) Speaker✓ (B) Scanner (C) Mouse (D) Digital camera

99. مشہور افسانہ' ٹوبہ ٹیک سنگھ' کس کی تصنیف ہے؟
(A) اشفاق احمد (B) کرشن چندر (C) سعادت حسین منٹو✓(D) خالدہ حسین

100. "مسجد قرطبہ" کس کی مشہور نظم ہے؟
(A) علامہ اقبال✓ (B) ن۔م راشد (C) جوش ملیح آبادی
(D) مولانا الطاف حسین حالی

Paper Code
G

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET.❷Write PAPER CODE on your ANSWER SHEET carefully.❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer.❼Sign the Answer Sheet in the box provided at the bottom corner.❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-7

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **The wavelength 'λ' of a wave depends on the speed 'v' of the wave and its frequency 'f'. Decide which of the following is correct?**

A) $f = v\lambda$ C) $f = \frac{v}{\lambda}$ ✓
B) $f = \frac{\lambda}{v}$ D) $f = v\lambda^{-2}$

☛ **Name the quantity which can be measured by using base unit 'kgm^2s^{-3}'**

A) Weight C) Power
B) Pressure D) Work✓

3. **Ratio of moment of inertia of two objects 'A' and 'B' is 2:3. Which one of the following is the ratio of torques of 'A' and 'B' respectively, if both are being rotated with constant angular acceleration?**

A) 3:4 C) 3:2
B) 2:3✓ D) 4:3

4. **Due to some mechanical fault, a lift falls freely from the top of a multistory building. Which of the followings is the apparent weight of a man inside the lift, If mass of man is 80 kg while value of 'g' is 10 ms^{-2}?**

A) 900 N C) 800 N
B) Zero✓ D) 700 N

5. **Stokes' Law is given as:**

A) $F = 6\pi\eta r^2 v$ C) $F = 6\pi\eta r v^{-1}$
B) $F = 6\pi\eta r v$✓ D) $F = 6\pi^2\eta r^2 v$

☛ **The product of cross-sectional area of the pipe and the fluid speed at any point along the pipe:**

A) Remains constant✓ C) Exponentially increases
B) Is zero D) Exponentially decreases

7. **A small leak is developed in a large water storage tank. If the height of water above leakage is 10 m, then find the speed of efflux through the leak:**

A) 14 m/sec✓ C) 9.8 m/sec
B) 10 m/sec D) 20 m/sec

8. **The minimum distance from the eye at which an object can be seen clearly without strain is called:**

A) Focal point C) Yield point
B) Near point✓ D) Far point

9. **In the diffraction of light around an obstacle, the angle of diffraction is increased then:**

A) The wavelength of incident light wave is increased✓
C) The amplitude of the incident light wave is increased
B) The wavelength of incident light wave is decreased
D) The amplitude of the incident light wave is decreased

☛ **An object 15 cm from a lens produces a real image 30 cm from the lens. What is the focal length of the lens?**

A) +15 cm C) +10 cm✓
B) +20 cm D) +25 cm

11. **What is the formula for critical angle in case of light through two mediums having refractive indexes n1 and n2 such that n1 > n2?**

A) $\sin^{-1}\left(\frac{n_1}{n_2}\right)$ C) $\cos^{-1}\left(\frac{n_2}{n_1}\right)$
B) $\cos^{-1}\left(\frac{n_1}{n_2}\right)$ D) $\sin^{-1}\left(\frac{n_2}{n_1}\right)$ ✓

12. **For vibrating mass-spring system, the expression of kinetic energy at any displacement 'x' is given by:**

A) $\frac{1}{2}kx_o^2\left(1-\frac{x^2}{x_o^2}\right)$ C) $\frac{1}{2}m\omega\left(1-\frac{x^2}{x_o^2}\right)$
B) $\frac{1}{2}kx_o^2$ D) $\frac{1}{2}m\omega^2 x_o$ ✓

13. **Speed of sound through a gas is measured as 340 m/s at pressure P1 and temperature T1. What will be the speed of sound if pressure of gas is doubled**

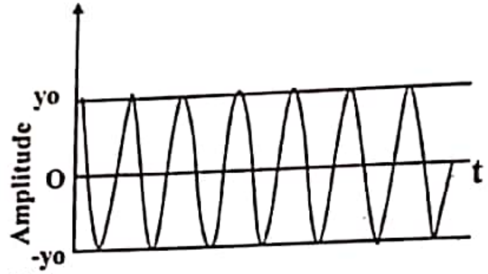
but temperature is kept constant?

A) 342 m/s✓
B) 340 m/s
C) 170 m/s
D) 680 m/s

The stress-strain graph, deduced the following limits successively:

A) Proportional limit, yield limit, elastic limit
B) Yield limit, elastic limit, proportional limit
C) Proportional limit, elastic limit, yield limit✓
D) Elastic limit, proportional limit, yield limit

15. **Variation of amplitude with respect to time for an oscillation object is shown in figure.**



Identify the oscillation:

A) Damped
B) Critical
C) Undamped✓
D) Heavily damped

16. **A 4.0 m long wire is subjected to stretching force and its length increases by 40 cm. The percent elongation which the wire undergoes is:**

A) 0.10 %
B) 40 %
C) 10 %✓
D) 20 %

17. **What is the value of universal gas constant?**

A) 8314 $Jmol^{-1}K^{-1}$
B) 83.14 $Jmol^{-1}K^{-2}$✓
C) 831.4 $Jmol^{-1}K^{-1}$
D) 8.314 $Jmol^{-1}K^{-2}$

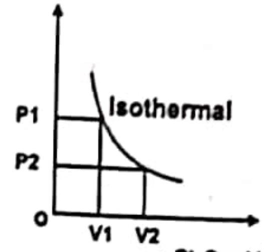
A gas sample contains three molecules each having speed 1 ms^{-1}, 2 ms^{-1}, 3 ms^{-1}. What is the mean square speed?

A) 14/3 m/s✓
B) 6 m/s
C) 2 m/s
D) $\sqrt{14/3}$m/s

19. **What is the factor upon which change in internal energy of an ideal gas depends?**

A) Change in volume
B) Change in temperature and volume
C) Change in temperature✓
D) Path followed to change internal energy

20. **What will be the mathematical form of first law of thermodynamics for a system whose variation of volume by pressure is shown?**



A) Q = U
B) U = W
C) Q = U/W
D) Q = W✓

For a heat engine 'A' ratio of Q1 to Q2 is 2/3 while that of heat engine 'B', ratio of Q2 to Q1 is 1/3. What is the value ηA : ηB?

A) 1:3
B) 1:2✓
C) 2:3
D) 2:1

22. **What is the charge stored on a 5 μF capacitor charged to potential difference of 12 V?**

A) 60 μC✓
B) 2.4 C D) 60 C
C) 2.4 μC

23. **Which of the following is the proper way to study the sinusoidal wave form of voltage?**

A) Voltage is connected to 'Y' input and time base is switched on.✓
B) Voltage is connected to 'X' input and time base is switched off.
C) Voltage is connected to 'Y' input and time base is switched off.
D) Voltage is connected to 'X' input and time base is switched on.

24. **12-volt battery is applied across 6-ohm resistance to have a steady flow of current. What must be the required potential difference across the same resistance to have a steady current of one ampere?**

A) 12 V
B) 6 V✓
C) 1 V
D) 3 V

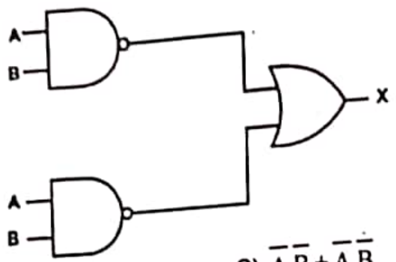
25. **A solenoid is cut into two halves. Magnetic induction due to same current in each half will be:**

A) Half of the original
B) Double of the original
C) Same as original✓
D) Four times of the original

A long straight current carrying conductor has current directed from bottom to top when held vertically. What will be the direction of magnetic field lines when observed from below the conductor?

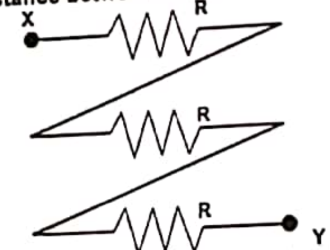
A) Clockwise✓
B) Anti clockwise
C) Vertically upward
D) Vertically downward

27. **What is the output Boolean expression of logic diagram shown in figure below:**



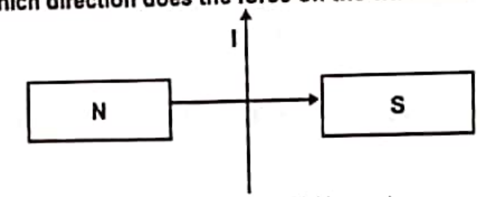
A) $\overline{(A+B)}.\overline{(A+B)}$
B) $(\overline{A}+\overline{B})(\overline{A}+\overline{B})$
C) $\overline{A}.\overline{B}+\overline{A}.\overline{B}$
D) $\overline{AB}+\overline{AB}$ ✓

☞ Three resistors each having value 'R' are connected as shown in figure. What is the equivalence resistance between 'X' and 'Y'?



A) R
B) R/3
C) 3R✓
D) R^3

29. The diagram shows a wire, carrying a current 'I', placed between the poles of magnet: In which direction does the force on the wire act?



A) Towards the 'N' pole of the magnet
B) **Downwards✓**
C) Upwards
D) Towards the 'S' pole of the magnet

30. **X-rays from a given X-ray tube operating under specified conditions have a minimum wavelength. The value of this minimum wavelength could be reduced by:**
A) Cooling the target
B) Reducing the temperature of the filament
C) **Increasing the potential difference between the cathode and the target✓**
D) Reducing the pressure in the tube

☞ **Helium-neon lasers are used for the:**
A) Precise measurement of range finding
B) Optical fiber communication systems
C) **Surveying for construction of tunnels✓**

D) Welding detached bone of body

32. **What is the type of characteristic X-ray photon whose energy is given by relation '$hf = E_M - E_K$'?**
A) K – alpha
B) M – alpha
C) **K – beta✓**
D) M – beta

33. **Kinetic energy of electrons by applying potential difference V1 across the x-ray tube is KE_1 while V_2 potential difference produce kinetic energy equal to KE_2. What will be the value of KE_1:KE_2 if ratio of potential difference V1:V2 = 2:3?**
A) 3:2
B) 4:9
C) 9:4
D) **2:3✓**

34. **What will be the relation for the speed of electron accelerated towards the target in X-ray tube by applying potential difference 'V', take mass of electron 'm' and charge on electron 'e'?**
A) $v=\sqrt{\frac{2Ve}{m}}$ ✓
B) $v=\sqrt{\frac{2me}{V}}$
C) $v=\sqrt{\frac{2V}{me}}$
D) $v=\sqrt{2meV}$

☞ **For what CAT stands in X-ray technology?**
A) Capacitor Amplifier Transistor
B) **Computerized Axial Tomography✓**
C) Cathode Anode Technique
D) Current Amplification Technology

36. **During the production of LASER, when the excited state E2 contains more number of atoms than the ground state E1, the state is known as:**
A) **Population Inversion✓**
B) Ground State
C) Excited state
D) Metastable state

37. **In cloud chamber the path of β-particles is:**
A) Straight, thick, short
B) Thin, wavy, shorter
C) **Thin, wavy, longer✓**
D) Thin, straight, short

38. **Among the three types of radioactive radiation, which have strongest penetration power?**
A) Alpha
B) **Gamma✓**
C) Beta
D) All have same penetration power

☞ **Emission of alpha decay from a radioactive substance causes:**
A) Decreases in 'Z' by 4 and decreases in 'A' by 2
B) Decreases in 'A' by 1 and 'Z' remains same
C) Decreases in 'Z' by 1 and 'A' remains same
D) **Decreases in 'A' by 4 and decreases in 'Z' by 2✓**

40. **10 Joule of energy is absorbed by 10-gram mass from a radioactive source. What is the absorbed dose?**
A) 1 gray
B) **1000 gray✓**
C) 10 gray
D) 100 gray

☞ **Isotopes are those nuclei of an element that have:**
A) Same mass number but different atomic number

B) Same mass number as well as atomic number
C) Different mass number as well as atomic number
D) same atomic number but different mass number✓

42. Which one of the following emission takes place in a nuclear reaction?
$_{90}Th^{234} \longrightarrow {}_{91}Pa^{232} +$ ______

A) Alpha
B) Gamma
C) Beta✓
D) Photons

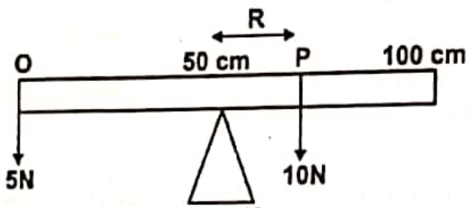
43. Emission of radiation from radioactive substance is:
A) Dependent on both temperature and pressure
B) Independent of temperature but dependent on
C) Independent of both temperature and Pressure✓
D) Independent of pressure but dependent on pressure

44. In a simple harmonic motion with a radius 'xo', the velocity of the particle at any point is:
A) $v = \omega\sqrt{x_o^2 - x^2}$
B) $v = \omega(x^2 - x_o^2)$ ✓
C) $v = \omega\sqrt{x_o - x}$
D) $v = \omega\sqrt{x - x_o}$

The formula for electric field strength is 'E = F/Q', where E is electric field strength and F is force and Q is charge. Which one of the following options gives the correct base units for electric field strength?
A) $kgms^{-3}A^{-1}$✓
B) $kgs^{-2}A^{-3}$
C) $kg^2m^{-2}s^{-3}A$
D) $ms^{-1}A^{-3}$

46. Which set of the prefixes gives values in increasing order?
A) Pico, Mega, Kilo, Tera
B) Pico, Micro, Mega, Giga✓
C) Tera, Pico, Micro, Kilo
D) Giga, Kilo, Milli, Nano

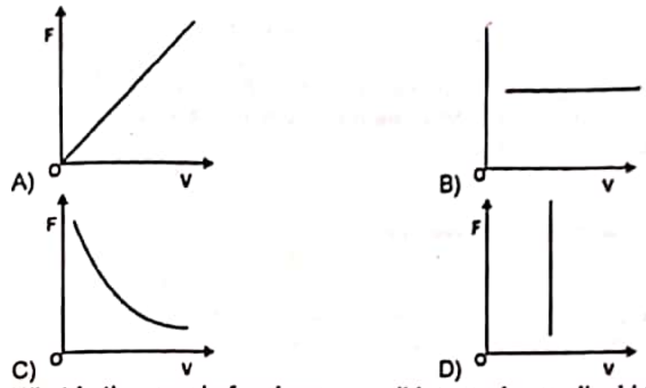
47. Two forces, 5 N and 10 N are acting at 'O' and 'P' respectively on a uniform meter rod suspended at the position of centre of gravity 50 cm mark as shown in the figure.



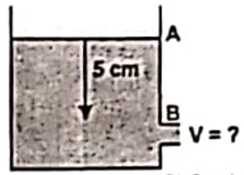
What is the position of 'P' on meter rod?
A) 80 cm
B) 75 cm✓
C) 70 cm
D) 65 cm

48. An oil film floating on water surface exhibits colour pattern due to the phenomenon of:
A) Diffraction
B) Polarization
C) Interference✓
D) Surface tension

49. Which of the following is the best graphical representation between drag force 'F' on a spherical object of radius 'r' and its speed 'v' through a fluid of viscosity 'η'?



What is the speed of an incompressible non-viscous liquid flowing out from 'B' contained in a container as shown in the figure? Where AB = 5 m and g = 10 m/s^2.



A) 5 m/s
B) 10 m/s✓
C) 2 m/s
D) 50 m/s

51. For the horizontal pipe, the fluid inside it is flowing horizontally then Bernoulli's equation can be written as
A) $P + \rho v^2$ = constant
B) $2P + \rho v^2$ = constant✓
C) $P + 2\rho v^2$ = constant
D) $2P + 2\rho v^2$ = constant

52. The value of the least distance of distinct vision or near point is ______ for a normal human eye.
A) 20 cm
B) 25 cm✓
C) 10 cm
D) 15 cm

In a compound microscope, the magnification by objective = 20, magnification by eyepiece = 11, then the total magnification is
A) M = -220
B) M = -0.19
C) M = -0.05
D) M = 220✓

54. The distance between atoms is 0.30 nm. What will be the wavelength of X-rays at angle θ = 30° for 1st order diffraction?
A) λ = 0.60 nm
B) λ = 0.30 nm✓
C) λ = 0.20 nm
D) λ = 0.90 nm

55. A 100 kg man is standing in an elevator, which accidently falls freely. What will be the weight of the person in the freely falling elevator (take g=10 m/s^2)
A) 1000 N
B) 10 N
C) 500 N
D) Zero✓

56. Frequency of simple pendulum of length 9.8 m will be

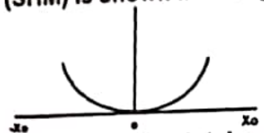
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A) 2 π Hertz
B) π/2 Hertz
C) 1/2π Hertz✓
D) π/4 Hertz

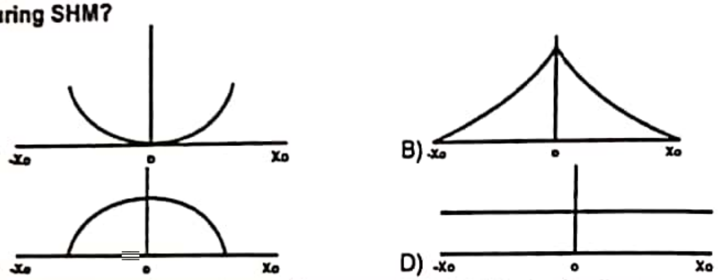
A body performs simple harmonic motion with a period of 0.063 s. The maximum speed of 3.0 ms^{-1}. What are the values of the amplitude 'x_o (m)' and angular frequency 'ω ($rads^{-1}$)'?
A) x_o = 0.03, ω = 100✓
B) x_o = 0.19, ω = 16
C) x_o = 5.3, ω = 16
D) x_o = 3.3, ω = 100

58. Food being cooked in microwave oven is an example of
A) Beats
B) Overtones
C) Resonance✓
D) Stationary waves

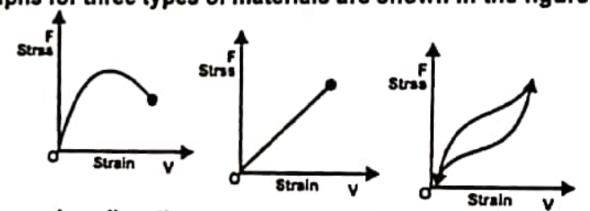
59. Potential energy of a mass spring system with respect to displacement during simple harmonic motion (SHM) is shown in the figure.



Which of the following represents the total energy of mass spring system during SHM?



Three graphs for three types of materials are shown in the figure.



Which row describes the correct materials?

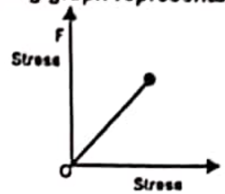
	X	Y	Z
A)	Brittle	Ductile	Polymer
B)	Brittle	Polymer	Ductile
C)	Polymer	Brittle	Ductile
D)	Ductile	Brittle	Polymer✓

61. A gas containing 'N' number of molecules of a gas having mass of each molecule 'm' is in a cubic container having length of each side 'a'. What is the density of gas contained in cube?
A) N/a^2
C) Nm/a^3✓

B) m/a^3
D) Na^3/m

62. In 'General Gas Equation PV=nRT', 'n' represents the number of moles of gas. Which of the following represents the relation of 'n'?
A) $n = NN_A$
B) $n = N/N_A$✓
C) $n = N_A/N$
D) $n = N + N_A$

Which feature of the following graph represents Young's Modulus?



A) Area under graph
B) Gradient of the graph
C) Reciprocal of the gradient✓
D) Product of gradient and area of the curve.

64. At triple point of water, the pressure of gas is 2680 Pa, by changing 'T' the pressure increases to 4870 Pa. Then 'T' is:
A) 496.38 K✓
B) 438.96 K
C) Zero
D) 496.38 °F

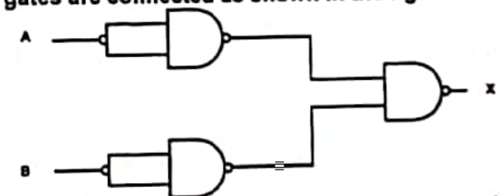
65. The relation between Celsius and Fahrenheit scales is:

$$\frac{C}{100} = \frac{F-32}{180}$$

At what temperature both scales give the same reading?
A) -100°
B) -40°✓
C) -180°
D) -273°

66. A heat engine working according to second law of thermodynamics has 50% efficiency. What will be the temperature of its low temperature reservoir if high temperature reservoir is 327 °C?
A) 27 °C✓
B) 127 °C
C) 300 °C
D) 600 °C

67. Three NAND gates are connected as shown in the figure.



Which of the following logic gate is formed in the connected circuit?
A) OR✓
B) AND
C) NOR
D) NAND

What is the output of the truth table?

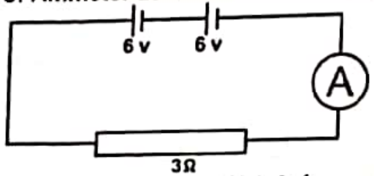
A	B	Output x = AB + AB
0	0	

1 0
1 1

A)

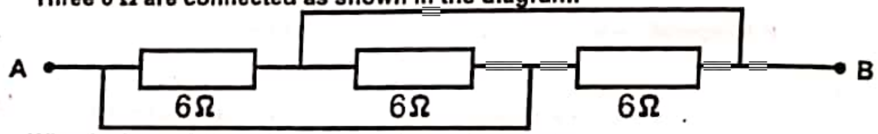
A)	X 0 0 1 1 ✓
B)	X 1 1 1 0
C)	X 1 0 0 1
D)	X 0 1 1 1

69. What is the reading of Ammeter as shown in the circuit diagram?



A) 1 A
B) 15 A
C) 5 A✓
D)10 A

70. Three 6 Ω are connected as shown in the diagram.



What is the resistance between points 'A' and 'B'?
A) 6 Ω
B) 16 Ω
C) 4 Ω
D) 2 Ω✓

The difference between the plates of a parallel plate capacitor is 2.0 mm and area of each plate is 2.0 m^2. The plates are in a vacuum. A potential difference of 1.0×10^4 V is applied across the plates. Find the capacitance.
A) 4×10^{-3} F
B) 3.54×10^{-9} F
C) 8.85×10^{-9} F✓
D) 9.0×10^{-9} F

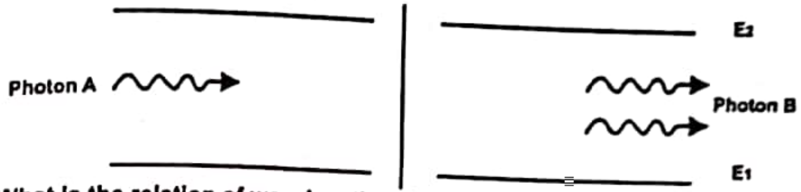
72. A solenoid 15 cm long has 300 turns of wire. A current of 5 A flows through it. What is the magnitude of magnetic field inside the solenoid?
A) 75×10^{7} T
B) $60 \times 10^{+3}$ T
C) $4\pi \times 10^{-3}$ T✓
D) $750\pi \times 10^{+3}$ T

73. Due to current in a straight conductor the difference between magnetic field lines
A) Increases away from conductor✓
B) Decreases away from conductor

C) Increases towards conductor
D) Decreases and then increases towards conductor

74. Magnetic Resonance Imaging (MRI) is used to identify the image of
A) Tumors and Inflamed tissues✓
B) Blood cells
C) Skin cells
D) Bone structures

75. Stimulated emission of two photons 'A' and 'B' during LASER action is shown in figure:

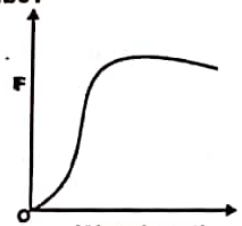


What is the relation of wavelengths of two photons?
A) λA = λB✓
B) λA > λB
C) λA < λB
D) λA = 2λB

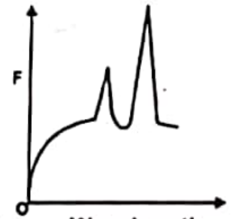
Bones absorb greater amount of incident X-rays than flesh. This is because of the fact that
A) Bones lie between the flesh
B) Bones are light in color
C) Bones contain material of low densities
D) Bones contain material of high densities✓

77. Which of the following techniques is the practical application of X-rays?
A) Magnetic Resonance Imaging
B) Ultrasonography
C) Computerized Axial Topography✓
D) Positron Emission Tomography

78. Which one of the following spectra is most typical of the output of an X-ray tube?

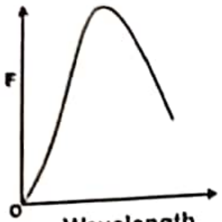


A)

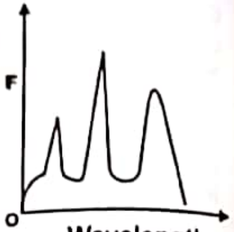


B)

C)



D)



79. Which one of the following has the largest energy content?
A) γ-rays✓
B) X-rays
C) Infra-red radiations
D) Ultra-violet radiations

What will be the energy of accelerated electron used to produce X-rays when the accelerating potential is 2 kV?
A) 2×10^{-19} J
B) 1.6×10^{-19} J
C) 3.2×10^{19} J
D) 3.2×10^{-16} J✓

81. UNESCO which deals with Education, Science and Culture, has its headquarters in:
(A) New York (B) Vienna (C) Paris✓ (D) Geneva

82. Beijing Declaration and Platform for Action (1992) deals with?
(A) International trade
(B) Rights and status of women✓
(C) Rights and protection of children
(D) Population control

83. Lahore Resolution of 23rd March 1940, was seconded from Sindh Province by:
(A) Begum Maulana Muhammad Ali Jauhar
(B) Chaudhri Khaliq-uz-Zaman
(C) Abdullah Haroon✓
(D) Nawab Muhammad Ismail

Congress launched "Quit India Movement" against the British Government in:
(A) 1940 (B) 1941
(C) 1942✓ (D) 1944

85. Which country banned the use of saliva, sweat to shine Cricket ball under COVID-19 guidelines?
(A) Australia✓ (B) India
(C) England (D) Pakistan

86. The virtual Summit of the Non Aligned Movement (NAM) on COVID-19 pandemic has been organised at the initiative of which country?
(A) Kazakhstan **(B) Azerbaijan✓**
(C) Uzbekistan (D) None of above

87. Corpse of Usman (R.A) remained unburied for?
(A) 3 days✓ (B) 5 days
(C) 1 days

Usman (R.A) was younger to the Prophet (S.A.W) by?
(A) 3 years (B) 4 years
(C) 5 years✓

89. Waves are caused by:
(A) Gravitational force of moon
(B) Gravit-ational force on Earth✓

(C) Sunrays (D) None of these

90. Conical projection is best suited for:
(A) Polar Regions (B) Equatorial Regions
(C) Temperate latitude✓ (D) None of these

91. $\sqrt{256}$:
(A) 17 (B) 14 (C) 16✓ (D) 128

92. x + 6 = 7, then x = ?
(A) 3 (B) 1✓ (C) $\frac{7}{6}$ (D) 13 x

93. Where ______ next Sunday? Perhaps I may be visiting you.
(A) do you spend✓ (B) did you spend
(C) will you have spent (D) you spend

If I ______ you, I would not lose temper.
(A) was **(B) were✓**
(C) bad been (D) would be

95. What is the function of the heart pacemaker?
(A) It decreases the heartbeat
(B) It regulates the heartbeat✓
(C) It accelerates blood supply to the heart
(D) All of these

96. What is the Richter Scale used to measure?
(A) Flood (B) Volcano
(C) Earthquake✓ (D) Tsunami

97. ______ key is used to change lowercase letters mode to uppercase and vice versa.
(A) Alt (B) Enter (C) Ctrl **(D) Caps Lock✓**

98. Computer is a combination of:
(A) Software (B) Hardware **(C) Both (a) and (b)✓**
(D) None

99. ہتھیلی پر ______ جمانا
(A) تیل (B) دہی (C) مرسوں✓ (D) برف

100. مان نہ مان میں تیرا ______
(A) محسن (B) مہربان (C) غم خوار (D) مہمان✓

Paper Code
H

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☛ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?
(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS

Original *Model* Paper-8

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Lenz's law is in accordance with the law of conservation of:**
   (A) Momentum (B) Charge
   (C) Angular momentum (D) Energy
2. **The basic circuit element in A.C. circuit which controls current:**
   (A) Resistor only (B) Capacitor only
   (C) Inductor only (D) All of these✓
3. **At resonance frequency, the impedance of RLC series circuit is:**
   (A) Zero (B) Minimum✓
   (C) Maximum (D) Moderate

☛ **The ability of a body to return to its original shape is called:**
   (A) Strain (B) Stress
   (C) Elasticity✓ (D) Plasticity

5. **The output voltage of a rectifier is:**
   (A) Smooth (B) Pulsating✓
   (C) Perfectly direct (D) Alternating
6. **A light emitting diode (LED) emits light only when:**
   (A) Revere biased (B) Forward biased✓

   (C) Unbiased (D) None of these

☛ **Joule-second is the unit of:**
   (A) Energy (B) Wein's constant
   (C) Planck's constant✓ (D) Boyle's law

8. **Energy of the 4th orbit hydrogen atom is:**
   (A) -2.51 eV (B) -3.50 eV
   (C) -13.6 eV (D) -0.85 eV✓
9. **Life time of meta stable state is:**
   (A) 10^{-5} s (B) 10^{-3} s✓
   (C) 10^{-8} s (D) 10^{-2} s
10. **The charge on β-particle is:**
   (A) +e (B) -e✓
   (C) +2e (D) None of these

☛ **Which one belongs to Lepton's group:**
   (A) Electron (B) Muons
   (C) Neutrinos (D) All of these✓

12. **Sensitivity of a galvanometer can be increased by:**
   (A) Decreasing the value of torsional couple✓ (B) Decreasing number of turns
   (C) Decreasing area of plane of coil (D) Decreasing magnetic field
13. **Which light photon has the least momentum:**
   (A) Red✓ (B) Blue
   (C) Yellow (D) Green

☛ **If magnetic field is doubled then magnetic energy density becomes:**
   (A) Four times✓ (B) Two times
   (C) Three times (D) Six times

15. **Which factor does not affect the conductivity of p-n junction diode:**
   (A) Doping (B) Temperature
   (C) Voltage (D) Pressure✓
16. **Equation $\phi = \vec{E}.\vec{A}$ is applicable to a surface:**
   (A) Spherical (B) Cylindrical
   (C) Conical (D) Flat✓
17. **The capacitive reactance to pure D.C. is:**
   (A) Zero (B) Infinite✓
   (C) Variable (D) Equal to inductive reactance

☛ **Mass of meson is:**
   (A) Greater than proton (B) Less than proton✓
   (C) Equal to proton (D) Equal to neutron

19. **Which is not true for X-rays:**
   (A) X-rays are not deflected by (B) X-rays are polarized

electric field

(C) X-rays consist of electromagnetic waves (D) X-rays can be diffracted by grating✓

20. **Which is true for both α-particles and γ-rays:**
(A) **They cause ionization in air✓** (B) They can be deflected by electric field
(C) They can be deflected by magnetic field (D) They can penetrate a few millimeter of aluminum

21. **The amount of energy acquired or lost by an alpha particle as it moves through p.d. of 1 V is:**
(A) **3.2×10^{-19} J✓** (B) 6.4×10^{-19} J
(C) 1.6×10^{-19} J (D) Zero

The impedance of RLC series circuit at resonance is given by:
(A) $Z = \sqrt{R^2 + (X_L - X_C)^2}$ (B) $Z = \sqrt{R^2 + X_L^2}$
(C) **Z = R✓** (D) $Z = \sqrt{R^2 + X_C^2}$

23. **Number of electrons emitted in photoelectric effect depends upon:**
(A) **Intensity of incident light✓** (B) Frequency of incident light
(C) Energy of incident light (D) Wavelength of incident light

24. **Which of the following has the least hysteresis loop area:**
(A) Steel (B) Wrought iron
(C) **Soft iron✓** (D) Cobalt

25. **The base in a transistor is of the order of:**
(A) **10^{-6} m✓** (B) 10^{-4} m
(C) 10^{-3} m (D) 10^{-1} m

26. **Grid in cathode ray oscilloscope controls:**
(A) **Number of electrons✓** (B) Temperature of filament
(C) Frequ3ency of electrons (D) Energy of electrons

The inductance can be increased by winding the wire around a core made of:
(A) Copper (B) Silicon
(C) **Iron✓** (D) Aluminum

28. **Resistivity at a given temperature depends upon:**
(A) Area of cross-section (B) Length
(C) **Nature of material of conductor✓** (D) Both length and area

29. **Potential difference across two terminal of silicon diode at 300 k is:**
(A) 0.3 V (B) **0.7 V✓**
(C) 0.9 V (D) 1.2 V

The rest mass energy of an electron positron pair is:
(A) 0.51 Mev (B) **1.02 Mev✓**
(C) 1.2 Mev (D) 1.00 Mev

31. **1 tesla is equal to:**
(A) 1 Nm A^{-1} (B) **1 Nm^{-1} A^{-1}✓**
(C) 1 Nm^{-1} (D) 1 Nm^{-2} A^{-1}

32. **Production of X-rays is reverse process of:**
(A) **Photo-electric effect✓** (B) Compton effect
(C) Annihilation (D) Pair production

33. **The velocity of an oscillating charge as it moves to and fro along a wire is:**
(A) **Changing✓** (B) Constant
(C) Infinite (D) Zero

Two down and one up quarks make:
(A) Proton (B) **Neutron✓**
(C) Photon (D) Position

35. **The winding of the electromagnet in motor are usually called:**
(A) Magnetic coils (B) **Field coils✓**
(C) Electric coils (D) Eelctric-o-electric coils

36. **Which one of the following can be taken as measure of electric field intensity:**
(A) $\frac{F}{A}$ (B) $\frac{\phi_e}{A}$✓
(C) $\frac{qA}{\varepsilon_o}$ (D) $\frac{\phi\varepsilon_o}{A}$

The thickness of base in a transistor is of the order of:
(A) 10^{-3} m (B) 10^{-9} m
(C) **10^{-6} m✓** (D) 10^{-6} mm

38. **Potassium cathode in photocell emit electrons for a light:**
(A) **Visible✓** (B) Infrared
(C) Ultraviolet (D) X-rays

39. **Choke consumes extremely small:**
(A) Current (B) Charge
(C) **Power✓** (D) Potential

Specific resistance of a material depends upon:
(A) Length (B) Area
(C) **Temperature✓** (D) Both A & B

41. **The mutual induction plays role in:**
(A) Generator (B) Galvanometer
(C) **Transformer✓** (D) D.C. motor

42. **The brightness of the spot on CRO screen is controlled by:**
(A) Anode (B) Cathode
(C) **Grid✓** (D) Deflecting plates

43. **Which one pair belongs to accepter impurity:**

(A) Arsenic, phosphorus (B) Boron, gallium✓
(C) Antimony, indium (D) Arsenic, antimony

44. **Which particle has larger range in air:**
(A) α-particle (B) γ-particle✓
(C) β-particle (D) Neutron

The value of Coulomb's constant (K) in SI units is:
(A) $9 \times 10^9\ Nm^2C^{-2}$✓ (B) $9 \times 10^9\ NC^{-2}m^{-2}$
(C) $9 \times 10^9\ N^{-1}\ m^2C^2$ (D) $9 \times 10^9\ Nm^2C^2$

46. **Light emitting diodes (LED) are made from semi-conductors:**
(A) Silicon (B) Germanium
(C) Carbon (D) Gallium arsenide✓

47. **Einstein was awarded Nobel Prize in Physics is:**
(A) 1905 (B) 1911
(C) 1918 (D) 1921✓

48. **The S.I unit of magnetic flux is given by:**
(A) $Nm\ A^{-1}$✓ (B) $NA^{-1}\ m^{-1}$
(C) $Nm^2\ A^{-1}$ (D) $Nm^{-1}\ A$

49. **In Helium Neon laser, discharge tube is filled with Neon gas:**
(A) 10% (B) 15%✓
(C) 85% (D) 90%

50. **The frequency A.C. source used in Pakistan is:**
(A) 50 Hz✓ (B) 60 Hz
(C) 45 Hz (D) 70 Hz

The number of isotopes of caesium are:
(A) 4 (B) 32
(C) 36 (D) 22

52. **Commutator was invented in:**
(A) 1736 (B) 1834✓
(C) 1935 (D) 1885

53. **Two opposite point charge of same magnitude separated by distance 2d, electric potential mid-way between them is:**
(A) 1 V (B) 2 V
(C) Zero✓ (D) $\frac{V}{2}$

The open loop gain of the amplifier is order of:
(A) 10^2 (B) 10^8
(C) 10^5✓ (D) 10^{12}

55. **The value of Wien's constant is:**
(A) 2.9×10^3 mK✓ (B) 2.9×10^3 mK
(C) 5.67×10^{-8} mK (D) $5.67 \times 10^{-8}\ wm^{-2}\ K^{-4}$

56. **In a pure inductive A.C. circuit, the current:**
(A) Lags behind voltage by 90°✓ (B) Leads the voltage by 90°

(C) In phase with voltage (D) Leads the voltage by 270°

57. **If the resistance of 500 Ω have fourth band of silver colour, then its upper maximum resistance will be:**
(A) 600 Ω (B) 550 Ω
(C) 450 Ω (D) 400 Ω

The working principle of transformer is:
(A) Self-induction (B) Faraday's law
(C) Mutual induction✓ (D) Electromagnetic induction

59. **If the number of turns become double but length remain same, then magnetic field in the solenoid become:**
(A) Half (B) Double✓
(C) Remain same (D) Zero

Which one f the following is crystalline solid:
(A) Zirconia✓ (B) Glassy solid
(C) Natural rubber (D) Poystrene

61. **Binding energy for deuteron nucleus is given by:**
(A) 2.8 Mev (B) 2.23 Mev✓
(C) 2.28 Mev (D) 2.25 Mev

62. **The concept of an electric field lines is introduced by:**
(A) Coulomb (B) Faraday✓
(C) Einstein (D) Joseph Henry

63. **Photocopier and inject printer are the applications of:**
(A) Electrostatics✓ (B) Magnetism
(C) Electricity (D) Electromagnetism

If a charged body is moved against the electric field, it will gain:
(A) P.E (B) K.E
(C) Mechanical energy (D) Electrical potential energy✓

65. **The brightness of the spot of CRO screen is controlled by:**
(A) Cathode (B) Anode
(C) Grid✓ (D) Plates

66. **The magnetic force is simply a:**
(A) Reflection force (B) Deflection force✓
(C) Restoring force (D) Gravitational force

The sensitivity of galvanometer can be increased by:
(A) Decreasing the area of coil (B) Decreasing the number of turns of coil
(C) Increasing the magnetic field✓ (D) Using a fine suspension

68. **When the back emf in a circuit is zero, it draws:**
(A) Zero current (B) Maximum current✓
(C) Minimum current (D) Average current

69. **An inductor may store energy in:**
(A) Its magnetic field✓ (B) Its electric field
(C) Its coil (D) A neighbouring circuit

70. **The phase angle between the voltage and current through resistor is:**
(A) 0°✓ (B) 45°
(C) 180° (D) 270°

71. **In case of capacitor, the unit of reactance is:**

(A) Ohm✓ (B) Mho
(C) Farad (D) Henry

Which type of impurity is to be added to a pure semi-conductor crystal to provide holes:
(A) Monovalent (B) Trivalent✓
(C) Tetravalent (D) Pentavalent

73. A diode characteristic curve is plotted between:
(A) Current and time (B) Voltage and time
(C) **Voltage and current✓** (D) Forward voltage and reverse voltage

74. **Transistors are made from:**
(A) Plastics (B) Metals
(C) Insulators (D) **Doped semi-conductors✓**

75. **The momentum of the moving photon is:**
(A) Zero (B) $h\lambda$
(C) $\frac{\lambda}{h}$ (D) $\frac{h}{\lambda}$ ✓

All motions are:
(A) Absolute (B) Uniform
(C) **Relative✓** (D) Variable

77. **Balmer series lies in the:**
(A) Ultraviolet region (B) Far ultraviolet region
(C) Infrared region (D) **Visible region✓**

78. **The number of protons in any atom are always equal to the number of:**
(A) Neutrons (B) **Electrons✓**
(C) Positrons (D) Mesons

79. **The building blocks of protons and neutrons are called:**
(A) Ions (B) Electrons
(C) Positrons (D) **Quarks✓**

Rest mass of photon is:
(A) Very small (B) Very large
(C) **Zero✓** (D) Equal to rest mass of proton

81. **Sharmeen Obaid Chinoy of Pakistan won an Oscar Award for best dcumentary film. What was the title of the film?**
(A) Acid Burns
(B) Desperate Women
(C) Dark Shadows (D) **Saving Face✓**

82. **"Chauburji" in Lahore is one of the famous monuments belonging to the Mughal period. It was reportedly built a gateway to a beautiful garden built for Princess Zebunnissa. She was an accomplished daughter of which Mughal Emperor?**
(A) Shahjahan (B) Akbar
(C) Jahangir (D) **Aurangzeb✓**

83. **Who presided over the Simla Conference in 1945?**
(A) Lord Minto (B) **Lord Wavell✓**
(C) Lord Irwin (D) Lord Mountbatten

In the Interim Government of 1946, the Minister of Health was:
(A) Sardar Abdur Rab Nishtar (B) Jag Jivan Ram

(C) Asif Ali (D) **Ghazanfar Ali Khan✓**

85. **Who is the Current Ambassador of the European Union to Pakistan?**
(A) Jean-Micheal Dumond (B) **Androulla Kaminara✓**
(C) Jean-Francois Cautain (D) Gerhard Sabathil

86. **Jack Dorsey, Twitter co-founder pledged $1 billion for coronavirus relief, which makes approximately_____% of his wealth.**
(A) 25% (B) **28%✓** (C) 30% (D) 38%

Who liberated Bilal (R.A)?
(A) Omar (R.A) (B) **Abu Bakr (R.A)✓** (C) Ali (R.A)

88. **First to accept Islam among men was?**
(A) **Ali (R.A)✓** (B) Zaid (R.A) (C) Abu Bakr (R.A)

89. **Zero degree meridian is:**
(A) 15° east of Prime Meridian (B) 10° east of Prime Meridian
(C) 5° west of Prime Meridian (D) **None of these✓**

90. **A map on RF 1:2400 will be:**
(A) A large-scale map (B) Small-scale map
(C) **Medium-scale map✓** (D) None of these

91. **1 metre is equal to:**
(A) 10^2 mm (B) **10^3 mm✓** (C) 10^4 mm (D) 10^5 mm

$2^3 \times 5^0$ =:
(A) 30 (B) 40 (C) **8✓** (D) 6

93. **I _______ Yasser since Monday.**
(A) **Have not seeing✓** (B) Did not see (C) Was not seeing

94. **We ________ for a picnic last week.**
(A) **Went✓** (B) Have gone (C) Had gone (D) Will go

95. **Which body organ produces urine?**
(A) Pancreas (B) Uterus (C) **Kidney✓** (D) Large intestine

96. **What are Newtons used to measure?**
(A) **Gravity✓** (B) Volcano (C) Earthquake (D) Tsunami

________ is not a hardware component.
(A) Input device (B) Secondary storage
(C) Processor (D) **Operating system✓**

98. **Another name of main memory is:**
(A) Secondary memory (B) **Primary storage✓**
(C) Permanent memory (D) None

99. جنڈیالہ شیر خان میں کون سی مشہور ہستی دفن ہے؟
(A) محمد بخش (B) وارث شاہ✓ (C) قتیل شفائی (D) ہیر سیال

100. پاکستان کا قومی پھول ______ ہے۔
(A) سورج مکھی (B) گل داؤدی (C) چنبیلی✓ (D) گلاب

Paper Code
I

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET carefully.❷Read QUESTION PAPER CODE on your ANSWER SHEET. ❸Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❹Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❺Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❻Sign the Answer Sheet in the box provided at the bottom corner. ❼Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☞ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-9

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Process of generating three dimensional images of objects by using laser beam is called**
   A) Photography
   B) 3-D cinema
   C) Holography✓
   D) Tomography

2. **Which one of the following isotopes of iodine is used for the treatment of thyroid cancer?**
   A) I - 113
   B) I - 120
   C) I - 131✓
   D) I - 140

☞ **A beta (β) particle is a fast-moving electron. During a β – decay how the atomic number and mass number of a nucleus change?**

	Atomic Number	Mass Number
A)	Remains the same	Increases by one
B)	Increases by one	Decreases by two
C)	**Increases by one**	**Remains the same✓**
D)	Decreases by two	Decreases by four

4. **A Uranium isotope $^{232}_{92}U$ undergoes one α–decay and one $_{-1}^{0}\beta$ – decay. What is the final product?**

A) 90
B) 92✓
C) 89
D) 88

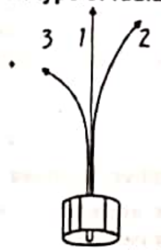
5. **A naturally occurring radioactive element decays two alpha particles. Which one of the following represents status of daughter element with respect to mass number 'A' and charge number 'Z'?**
   A) 'Z' decreases by 4 and 'A' decreases by 2
   B) 'Z' decreases by 2 and 'A' decreases by 4
   C) 'Z' decreases by 4 and 'A' decreases by 8✓
   D) 'Z' decreases by 8 and 'A' decreases by 4

☞ **A radioactive isotope 'W' decays to 'X' which decays to 'Y' and 'Y' decays to 'Z' as represented by the figure below:**



What is the change in the atomic number from 'W' to 'Z'?
A) Increases by 3
B) Decreases by 3✓
C) Increases by 5
D) Decreases by 5

7. **Three paths of radioactive radiations are observed as shown in the figure in the presence of electric field. Which type of radiation is shown in path 1?**



A) Alpha
B) Beta
C) Gamma✓
D) Cathode rays

8. **What is the absorbed dose 'D' of a sample of 2 kg which is given an amount of 100 J of radioactive energy?**
   A) 200 Gy
   B) 102 Gy
   C) 50 Gy✓
   D) 98 Gy

9. **One method of creating an inverted population is known as ______ and consist of illuminating the laser material with light.**
   A) Optical Pumping✓
   B) Excitation
   C) Bremsstrahlung
   D) Holography

10. **In population inversion (Ruby Laser) atoms can reside in the excited state for:**
    A) 10^{-11}
    B) 10^{-8}✓
    C) 10^{-3}
    D) 10^{+3}

☞ **If electrons of charge 'e' moving with velocity 'v' are accelerated through a potential difference 'V' and strike a metal target, then velocity of electrons is:**

A) $\frac{Ve}{m}$
C) $\sqrt{\frac{Ve}{2m}}$

B) $\sqrt{\frac{Ve}{m}}$

D) $\sqrt{\frac{2Ve}{m}}$ ✓

12. In X-ray tube, electrons after being accelerated through velocity 'v' strike the target, then the wavelength of emitted X-rays is:

A) Not greater than $\frac{hc}{eV}$

C) Equal to the $\frac{h}{mV}$

B) Not less than $\frac{hc}{eV}$

D) Equal to $\frac{hc}{eV}$ ✓

13. In the reaction, $^{234}_{92}Th \rightarrow ^{234}_{91}Y + ^{0}_{-1}e$ the electron $^{0}_{-1}e$ emits from the

A) 1st Orbit

C) Nucleus✓

B) 2nd Orbit

D) Valence Shell

☞ According to the equation $^{A}_{Z}X \rightarrow T + 3\alpha$ particles, what are the atomic and mass numbers of 'Y'?

A) Z – 6, A – 12✓

C) Z + 1, A

B) Z – 2, A – 4

D) Z + 3, A

15. A certain radioactive nuclide of mass number 'x' decays by β-emission and α-emission to a second nuclide of mass number 't'. Which of following correctly relates 'x' and 't'?

A) x = t + 4✓

C) x – 3 = t

B) x = t – 4

D) x – 1 = t

☞ During the decay of radioactive isotopes $^{232}_{90}X$ to a stable isotope, six α-particles and four β-particles are emitted, what is the atomic number 'Z' and mass number 'A' of the stable isotopes.

A) Z = 70, A = 220

C) Z = 82, A = 212

B) Z = 78, A = 212

D) Z = 82, A = 208✓

17. Cobalt 60 is used in medicine and is an intense source of:

A) α-particles

C) γ-rays✓

B) β-particles

D) Neutrons

18. In fluid flow, for the equation of continuity A1v1 = A2v2. If velocity of the fluid at one end is doubled, then what will be the cross-sectional area at this end?

A) Double

C) $(Half)^2$

B) Half✓D) $(Double)^2$

19. The value of least distance vision for normal eye is

A) 20 cmC) 25 cm✓

B) 30 cmD) 40 cm

☞ The distance between two dark adjacent fringes is mathematically written as:

A) $\Delta Y = \frac{\lambda L}{d}$ ✓

C) $\Delta Y = \frac{\lambda d}{L}$

B) $\Delta Y = \frac{\lambda}{dL}$

D) $\Delta Y = \frac{d}{\lambda L}$

21. In Young's Double Slit Experiment, slit separation x = 0.05 cm, distance between screen and slit D = 200 cm, fringes separation x = 0.13 cm, then the wavelength 'λ' of light is:

A) $\lambda = 1.23 \times 10^{-2}$ m

C) $\lambda = 4.55 \times 10^{-4}$ m

B) $\lambda = 3.25 \times 10^{-7}$ m✓

D) $\lambda = 5.1 \times 10^{-7}$ m

22. In normal adjustment of compound microscope, the eye piece is positioned so that the final image is formed at:

A) Optical Center

C) Principle Focus

B) Infinity

D) Near Point✓

23. Mathematical formula of maximum velocity (vo) for a body executing simple harmonic motion is:

A) $v_o = \omega x_o$✓

C) $v_o = v_o\sqrt{1 - \frac{x^2}{x_o^2}}$

B) $v_o = \frac{k}{m}\sqrt{x_o^2 - x^2}$

D) $v_o = m\sqrt{x_o^2 - x^2}$

☞ A body is having weight 20 N, when the elevator is descended with a = 0.1 ms-2, then the value of tension 'T' is:

A) 196 NC) 1.98 N

C) 19.8 N✓

D) 2 N

25. Sodium 24 has half-life of 15 hour and it is used in medicine to estimate:

A) Kidney Function

C) Iron in Plasma

B) Plasma Blood Volume✓

D) Thyroid Function

26. The unit of temperature in base unit is:

A) Celsius

C) Kelvin✓

B) Degree

D) Fahrenheit

☞ The dimensions of pressure is:

A) $[M^{-1}L^{2}T^{-2}]$

C) $[M^{-1}L^{-2}T^{-2}]$

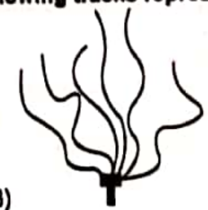
B) $[ML^{-1}T]$

D) $[ML^{-1}T^{-2}]$✓

28. In Wilson Cloud Chamber which of the following tracks represented β-particles?



A)



B)

C) 

D) 

29. Mass flow per second of the fluid is given by:
A) ρAv ✓
B) Av
C) ρv
D) $\frac{Av}{\rho}$

30. The dimension of coefficient of viscosity is:
A) $[M^{2}L^{-1}T^{-1}]$
B) $[ML^{-2}T^{-1}]$
C) $[ML^{-2}T^{1}]$
D) $[ML^{-1}T^{-1}]$ ✓

31. What should be the length of simple pendulum whose period is 6.28 second at a place where $g = 10\ ms^{-2}$.
A) 0.28 m
B) 10.8 m
C) 6.28 m
D) 10 m ✓

What should be the ration of kinetic energy to total energy for simple harmonic oscillator?
A) $1-\frac{x^2}{x_o^2}$ ✓
B) 1
C) $\left(x_o^2 - x^2\right)$
D) $\frac{1}{2}x^2$

33. An observer moves with velocity 'vo' toward a stationary source, then the number of waves received in one second is:
A) $f' = f\left(\frac{v}{v+v_o}\right)$
B) $f' = f\left(\frac{v}{v-v_o}\right)$
C) $f' = f\left(\frac{v+v_o}{v}\right)$ ✓
D) $f' = f\left(\frac{v-v_o}{v}\right)$

34. Strain energy in a deformed energy is stored in the form of:
A) Elastic Energy
B) Potential Energy ✓
C) Plastic Energy
D) Kinetic Energy

A wire of area of cross section 'A' and original length 'l' is subjected to a load 'L'. A second wire of same material with an area is '2A' and length '2l' is subjected to the same load 'L'. If the extension in first wire is 'X' and second wire is 'Y', find the ratio 'X/Y'.

A) $\frac{1}{4}$
B) $\frac{1}{2}$
C) $\frac{1}{1}$ ✓
D) $\frac{1}{1}$

36. Two sample of gases '1' and '2' are taken at same temperature and pressure but the ratio of number of their volume is V1:V2 = 2:3. What is the ration of number of moles of the gas sample?
A) 3:2
B) $\sqrt{2}:\sqrt{3}$
C) 4:9
D) 2:3 ✓

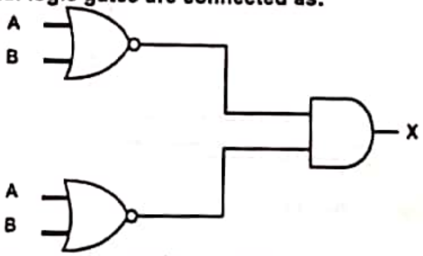
37. Root mean square velocity of a gas having pressure 'P' and density 'ρ' is given by:
A) $\sqrt{\frac{3P}{\rho}}$ ✓
B) $\frac{3P}{\rho}$
C) $\sqrt{\frac{3\rho}{P}}$
D) $\frac{3\rho}{P}$

38. When the rate of gas changes without change in temperature, the gas is said to undergo:
A) Isothermal Process ✓
B) Adiabatic Process
C) Isochoric Process
D) Isobaric Process

What is the 273 k on the Celsius scale of temperature?
A) 0.15 °C
B) 273.15 °C
C) -0.15 °C ✓
D) -273.15 °C

40. If heat 'Q1' is absorbed at temperature 'T' and heat 'Q2' is absorbed at temperature of triple point of water, then unknown temperature of system (in K) is:
A) 273.16
B) 273.16 Q_2/Q_1
C) 273.16 Q
D) 273.16 Q_1/Q_2 ✓

41. If the fundamental logic gates are connected as:



What are the mathematical notation for this logic gate?
A) $(A+B).(A+B)$
B) $(\overline{A+B}).(\overline{A+B})$ ✓
C) $(\overline{A+B})(A+B)$
D) $\overline{AB}+\overline{AB}$

42. Which combinations of seven identical resistors each of 2 Ω gives rise to the

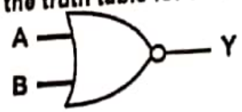
resultant of 10/11 Ω?

A) 5 Parallel, 2 Series
B) 4 Parallel, 3 Series
C) 3 Parallel, 4 Series
D) 2 Parallel, 5 Series✓

☞ If a resistor having resistance 'R' is cut into three equal parts, then the equivalent of parallel combination is:

A) $\frac{6}{R}$
B) $\frac{3}{R}$
C) $\frac{R}{9}$ ✓
D) $\frac{R}{3}$

44. Which of the following is the truth table for the logic gate;



A)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	1

✓

B)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

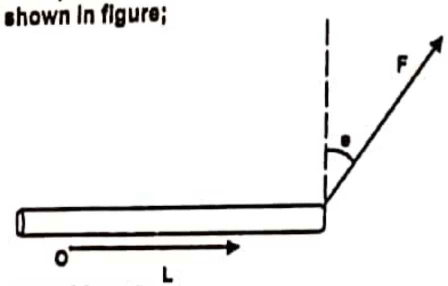
C)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

D)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

☞ A bar of length 'L' pivoted at 'O' is acted by a force 'F' at an angle 'θ' with vertical line as shown in figure;



What is the moment of force?

A) L sinθ
B) L cosθ
C) LF cosθ✓
D) LF sinθ

46. The resistance of a piece of wire is 12 Ω. It is bent to form an equilateral triangle. What is the equivalent resistance between any two corners of the triangles?

A) 1.3 Ω
B) 2.0 Ω✓
C) 4.0 Ω
D) 2.7 Ω

47. Magnetic field strength is measure in:

A) Wbm^{-1}
B) Wbm^{-2}✓
C) Wbm^{2}
D) Wb

48. Force on current carrying conductor per unit length is given by:

A) IL sinθ
B) ILB
C) IL
D) IB sinθ✓

49. In the case when the electrons lose all their kinetic energy (K.E.) in the first collision, the X-ray photon emitted has which of the following set of frequency and wavelength?

A) fmax, λmin✓
B) fmax, λmax
C) fmin, λmax
D) fmin, λmin

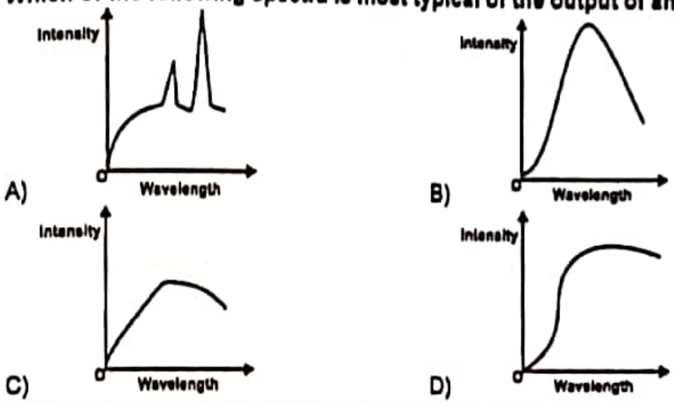
50. If 'A' is fundamental dimension of ampere then the dimension of magnetic field strength is:

A) $[MT^{2}A^{-2}]$
B) $[MT^{-2}A^{-1}]$✓
C) $[MT^{2}L^{2}A^{-1}]$
D) $[MT^{2}L^{-2}A^{-2}]$

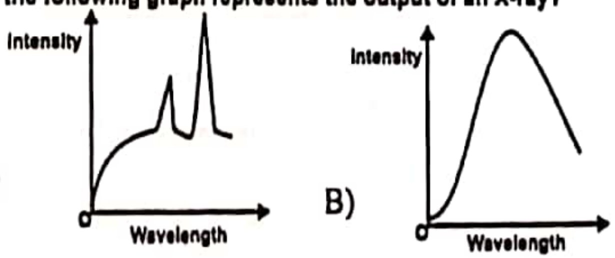
☞ The potential difference between target and cathode of an X-rays tube is 20 kV and current is 20 mA. What is the λmin of the emitted X-ray?

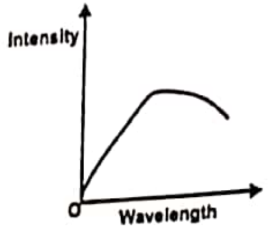
A) 6.19×10^{-4} m
B) 6.19×10^{-14} m
C) 6.19×10^{-11} m✓
D) 6.19×10^{-19} m

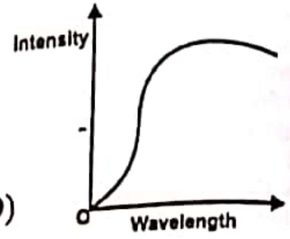
52. Which of the following spectra is most typical of the output of an X-ray tube?



53. Which of the following graph represents the output of an X-ray?



C) 

D) 

54. **The continuous spectrum of X-ray is formed due to:**
A) Characteristics of X-rays
B) Bremsstrahlung X-ray✓
C) Soft X-ray
D) Hard X-ray

Wavelength of γ-rays is:
A) Equal to the X-rays
D) Longer to the X-rays
C) Shorter to the X-rays✓
D) Boarder to the X-rays

56. **Thorium is transformed after the transmission of β-particle into:**
A) Bismuth
B) Protactinium✓
C) Polonium
D) Palladium

57. **Emission of γ-rays from radioactive element results into:**
A) Bismuth
B) Protactinium
C) Polonium✓
D) Palladium

58. **The relation between decay constant 'λ' and half-life 'T½' of radioactive substance is:**
A) $\lambda = \frac{1}{T_{1/2}}$
B) $\lambda = 0.693\,T_{1/2}$
C) $\lambda = T_{1/2}$
D) $\lambda = \frac{0.693}{T_{1/2}}$ ✓

59. **Radioisotope which is used to combat cancer of thyroid gland is:**
A) Iodine-131✓
B) Phosphorous-32
C) Strontium-90
D) Cobalt-60

Sodium-24 is used for:
A) Sterilization
B) Study of circulation of blood✓
C) Skin Cancer
D) Thyroid Cancer

61. **Energy radiation absorbed at the rate of one joule per kilogram is called:**
A) 1 Rad
B) 1 Sievert
C) 1 Yellow
D) 1 Gray✓

62. **The time period 'T' of a simple pendulum depends on its length 'l' and acceleration due to gravity 'g' using unit dimension. The correct equation for time period is:**
A) $T = k\sqrt{\frac{g}{l}}$ where 'k' is constant
B) $T = k\sqrt{\frac{l}{g}}$ where 'k' is constant
C) $T = \frac{1}{k}\sqrt{\frac{g}{l}}$ where 'k' is constant
D) $T = \frac{1}{k}\sqrt{\frac{l}{g}}$ where 'k' is constant

63. **The unit for electric charge is Coulomb and one Coulomb in terms of base unit is equivalent to:**
A) Am
B) Js^{-1}
C) As✓
D) C

A man in elevator ascending with an acceleration will conclude that his weight is:
A) Increased✓
B) Decreased
C) Reduced to zero
D) Remain Constant

65. **If we double the moment arm the value of torque becomes:**
A) Half
B) Three-times
C) Two-times✓
D) Four-times

66. **When fluid is incompressible, the quantity is constant is:**
A) Mass
B) Density✓
C) Pressure
D) Force

67. **The minimum distance from the eye at which an object appears to be distant is:**
A) 25 cm✓
B) 22 cm
C) 35 cm
D) 20 cm

68. **Using the relation for the magnifying power Lo, M = 1 + d/f, if f = 5 cm and d = 25 cm then M will be:**
A) 5
B) 7
C) 6✓
D) 8

Resonance occurs when the driving frequency is:
A) Greater than natural frequency
B) Unequal the natural frequency
C) Less than natural frequency
D) Equal to the natural frequency✓

70. **The red shift measurement of Doppler effect of galaxies indicate that the universe is:**
A) Expanding✓
B) Contracting
C) Stationary
D) Oscillating

71. **Frequency audible range to human hearing lies in the range:**
A) 2-2000 kHz
B) 15-50000 kHz
C) 20-20000 Hz✓
D) 20-20000 kHz

72. **Tuning a radio is a best example of:**
A) Natural resonance
B) Mechanical resonance
C) Free resonance
D) Electrical resonance✓

The ratio of applied stress to the volumetric strain is called:
A) Bulk Modulus✓
B) Shear Modulus
C) Tensile modulus
D) Young's Modulus

74. **The wire made of copper belong to which specific kind of material:**
A) Ductile material✓
B) Tough material
C) Brittle material
D) Deformed material

75. **The relation $\frac{R}{N_A} = 1.38 \times 10^{-23}\ JK^{-1}$ in a gas law is known as:**
A) Avogadro's constant
B) Charles constant
C) Newton's constant
D) Boltzmann's constant✓

76. The relation 'PV = nRT' shows which law of physics:
A) Charles Law
B) Avogadro's Law
C) Newton's Constant
D) Ideal Gas Law✓

The rapid escape of air from a burst tyre is an example of:
A) Adiabatic processes✓
B) Isothermal process
C) Cooling process
D) First law of thermodynamics

78. Which relation exactly described the isothermal process?
A) Q = W✓
B) W = -ΔU
C) Q = -ΔU
D) Q = ΔU + W

79. If a turbine is working as a heat engine and takes that from hot body (427 °C) and exhausts into a body at 77 °C then what is the possible efficiency?
A) 50%✓
B) 70%
C) 90%
D) 95%

80. Which one of the following is the Boolean expression of NAND gate?
A) X = A.B
B) X = A + B
C) X = A.B✓
D) X = A + B

81. "World Economic Forum", which holds its annual sessions in Davos, Switzerland, was founded by:
(A) Henry Kissinger
(B) Konrad Adenau
(C) W. Senwad✓ (D) None of these

When was the right to vote was given to women in Switzerland?
(A) 1935 (B) 1950
(C) 1965 (D) 1971✓

83. After Sir Agha Khan, the next President of All India Muslim League was:
(A) Viqar-ul-Mulk
(B) Maulana Zafar Ali Khan
(C) Raja Sahib of Mahmoodabad✓
(D) Mian Muhammad Shafi

84. The Hindus had launched 'Swadeshi Movement" (to boycott English made goods) in the wake of:
(A) The Urdu-Hindi Controversy 1867
(B) Partition of Bengal 1905✓
(C) Jallianwala Bagh Tragedy 1919
(D) All of the above

Bernie Sanders suspended his presidential campaign, clearing the way for Joe Biden to become the Democratic Party's nominee on?
(A) Apr 7, 2020 (B) Apr 8, 2020✓
(C) Apr 9, 2020 (D) Apr 10, 2020

86. Leonardo Dicaprio, the Hollywood star recently launched a coronavirus fund by the name of_____.
(A) America's Health Relief (B) America's Food Relief
(C) America's Health Fund (D) America's Food Fund✓

87. Younas (A.S) remained in the belly of the whale?
(A) 20 days (B) 40 days✓ (C) 10 days

88. Messengers mentioned in the Quran are?
(A) 23 (B) 25✓ (C) 28

89. Lines showing place of equal rainfall are called:
(A) Isohalines (B) Isobars
(C) Isopleths (D) None of these✓

Sea water contains on the average about:
(A) 3.5% Salt✓ (B) 2.7% Salt
(C) 7.1% Salt (D) None of these

91. 144 ÷ 12:
(A) 13 (B) 12✓ (C) 14 (D) 22

92. Find the missing letter:
3 5 7 ...... 13 17
(A) 8 (B) 9 (C) 11✓ (D) 12

93. When he last wrote to me, he _______ in Lahore.[1]
(A) Had lived✓ (B) Lived (C) Was living (D) Has been living

94. I wondered why I _______ of it before.
(A) Did not think (B) Have not thought (C) Had not thought✓
(D) Would not think

95. What is the most abundant element in the universe?
(A) Hydrogen (B) Oxygen (C) Sodium✓ (D) Copper

How many chambers are there in the human heart?
(A) 2 (B) 4✓ (C) 3 (D) 6

97. A set of instructions in a computer is:
(A) Software (B) Program (C) Hardware
(D) Both (a) and (b)✓

98. A program or set of programs that is specially designed to control the computer system is called:
(A) System Software✓ (B) Application Software
(C) Freeware (D) Shareware

.99 قرطبہ اور غرناطہ شہر کس یورپی ملک میں واقع ہیں؟
(A) فرانس (B) آئرلینڈ
(C) اسپین✓ (D) ہالینڈ

.100 مشتاق احمد یوسفی کون ہیں؟
(A) مزاح نگار✓ (B) بزنس مین
(C) صحافی (D) سیاستدان

[1] When two actions done in the past sentence one action consists of past indifinite and 2nd action comprising past perfect tense.

Paper Code
J

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-10

PUBLIC SERVICE COMMISSION

WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. Which one of the following is the truth table of NAND gate?

A)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

B) ✓

A	B	Y
0	0	0
0	1	0
1	0	1
1	1	0

C)

A	B	Y
0	1	1
1	1	0

D)

A	B	Y
0	0	0
1	1	1

2. If the length, width and separation between the plates of a parallel plate capacitor is doubled then its capacitance becomes:

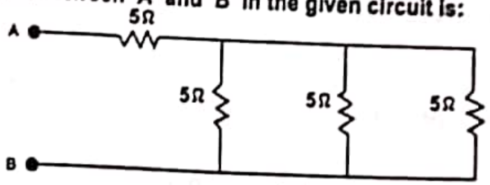
A) Double✓ C) Four-times
B) Half D) Eight-times

☛ **Resistance between two opposite faces of square thin film of area 1 mm² having thickness of 1 μm if resistivity of material is 10^{-4} Ω will be:**

A) 1000 Ω C) 1 Ω

B) 100 Ω D) 10 Ω

4. Total resistance between 'A' and 'B' in the given circuit is:



A) 5.6 Ω C) 0.33 Ω
B) 3.33 Ω D) 6.6 Ω✓

5. 'F' is maximum force acting on a conductor. Now if we change the direction of conductor by making an angle of 45° with the magnetic field then the force becomes:

A) $\frac{F}{2}$ C) $\frac{F}{\sqrt{2}}$✓
B) 2F D) $\sqrt{2}F$

6. If we doubled all the parameters of the force acting on current carrying conductor and θ = 90° then magnetic force becomes:

A) Half C) Eight-times✓
B) Double D) Four-times

☛ **The force acting on current carrying conductor will be maximum if the angle between magnetic field and conductor is:**

A) 0° C) 90°✓
B) 30° D) 60°

8. The shadow of the bones in X-rays photographic film appears lighter than the surrounding flesh due to:

A) Bones reflect greater amount of X-rays C) Bones absorb greater amount of X-rays
B) Bones absorb less amount of X-rays✓ D) Bones totally reflect X-rays

9. The atom is excited to an energy level Ei from its ground state energy level Eo, the wavelength of the radiations emitted is:

A) $\frac{(E_o - E_i)}{hc}$ C) $\frac{hc}{(E_i - E_o)}$✓
B) $\frac{(E_i - E_o)}{hc}$ D) $\frac{E_i}{hc} - \frac{E_o}{hc}$

☛ **Which one of the following gas is the lasing or active medium in the laser tube?**

A) Hydrogen C) Neon✓
B) Helium D) Carbon dioxide

11. The target of X-ray tube is made up of which metal?

A) Iron C) Brass
B) Nickel D) Tungsten✓

12. The X-rays consists of:

A) High energy proton C) High energy γ-rays
B) High energy electrons D) High energy photons✓

13. In Bernoulli's equation the term $\frac{1}{2}\rho v^2$ is called:
A) K.E. per unit volume✓
B) K.E.
C) K.E. per unit area
D) K.E. per unit length

14. Potential energy per unit volume is given by:
A) mgh
B) $\frac{mgh}{\rho}$
C) gh
D) ρgh✓

If general equation for destructive interference's is given by the relation,
Optic path difference = $\left(m+\frac{1}{2}\right)\lambda$
where 'm' is an integer, then first dark fringe appears from 'm' will be equal to:
A) $\frac{2}{3}$
B) $\frac{1}{2}$
C) 0✓
D) 1

16. For bright fringe formation, the path difference is:
A) $\left(n+\frac{1}{2}\right)\lambda$ where n = 0, 1, 2, 000
B) $n\lambda$ where n = 0, 1, 2, ... ✓
C) $(2n+1)\frac{1}{2}$ where n = 0, 1, 2, ...
D) $\left(\frac{n+1}{2}\right)\lambda^2$ where n = 0, 1, 2, ...

17. The quantities which can be measured accurately are:
A) Base quantities
B) Physical Quantities✓
C) Derived Quantities
D) Supplementary quantities

18. An observer notes reading of scale from different angle (parallax) while measuring the length of wire, what type of error is possible:
A) Systematic error
B) Zero error
C) Precised error
D) Random error✓

The ratio of displacement along diameter of circle and total distance along circle is:
A) 1: π✓
B) π : 1
C) 2 : π
D) π : 2

20. Arshad is driving down 7th street, he drives 150 m in 18s.. Assume he does not speed up or slow down, what is his speed:
A) 0.38 m/s
B) 126 m/s
C) 8.33 m/s✓
D) A 58.33 m/s

21. The distance travelled by a moving car with velocity 15 m/s in 2s, decelerates at 2m/s is:
A) 30 m
B) 34 m
C) 16 m
D) 26 m✓

22. Total work done in figure is:



A) 24 Nm
B) 8 Nm
C) 16 Nm
D) Zero Nm✓

Work done will be zero if angle between force and displacement is:
A) 0° C) 270°✓
B) 60°
D) 360°

24. If mass 'm' is dropped from height 'h' vertically, 'f' is the force of friction during downward motion and 'v' is the velocity at bottom, following will hold:
A) 1/2 mv^2 = mgh + fh
B) mgh = ½ mv^2 – fh
C) fh = mgh + ½ mv^2
D) mgh = ½ mv^2 + fh✓

25. A body moves in a circle with increasing angular velocity, at time 't' = 6s the angular velocity is 22rad/s.. What is the radius of circle where linear velocity is 81 cm/s:
A) 6 cm
B) 9 cm
C) 7 cm
D) 3 cm✓

26. A moon rotates about its axis. In future scientists may wish to put a satellite into an orbit around the moon such that the satellite remains stationary above one point on moon surface, the period of rotation of moon about its axis is 27.4 days, what is the radius of required orbit?
A) 3.59×10^7 m
B) 4.23×10^7 m
C) 8.86×10^7 m✓
D) 6.96×10^8 m

In mass spring system mass 'm' is attached with spring of spring constant 'k' with period 'T_1'.. Then the mass is replaced by '2m' with same spring, what is the time period 'T_2':
A) $T_2 = T_1$
B) $T_2 = 2T_1$
C) $T_2 = \sqrt{2}\ T_1$✓
D) $T_2 = T_1\sqrt{2}$

28. A body performing SHM with displacement $x = x_o \sin(wt + fi)$, when t = 0, x = x_o.. Then what is the phase angle fi?
A) π
B) π/2✓
C) π/4
D) -π

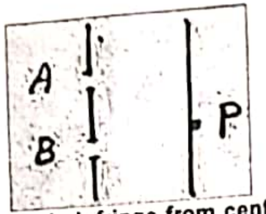
29. Angular displacement of a point moving in a circle 10 cm when displacement of projection of this point along vertical diameter of circle is 8.66cm will be:
A) 30°
B) 45°
C) 60°✓
D) 75°

30. A wave travelling with speed of 130 m/s having wavelength of 5m. What is its frequency:
A) 650 Hz
B) 20 Hz
C) 26 Hz✓
D) 3.8×10^2 Hz

A metallic wire of length 2m hooked between two points has tension 10N. If mass per unit length is 0.004 kg/m, their fundamental frequency emitted by wire

on vibration is:
A) 48 Hz
B) 24 Hz
C) 12.5 Hz✓
D) 6.25 Hz

32. Coherent lines emerge from two fine parallel slits 'A' and 'B' as shown in figure:



If 'P' is the position of nth dark fringe from centre of interference, then phase difference between wave train 'A' and 'B' is:
A) nπ radian
B) 2πn radian
C) (n +1/2)π radian✓
D) (2n + 1)π radian

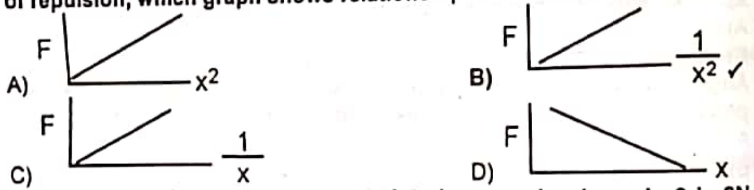
33. The wavelength of light which produces second order spectrum on diffraction grating on which 5000 lines/cm are ruled at an angle of 30° will be:
A) 6×10^{-7} m
B) 4×10^{-6} m
C) 5×10^{-7} m✓
D) 3×10^{-6} m

34. Estimate pressure of air molecules at 273K, if mean square speed is 500 m^2/s^2 and density of air is 6 kg/m^3:
A) 1×10^3 Pa✓
B) 2.5×10^2 Pa
C) 1×10^2 Pa
D) 2.7×10^3 Pa

35. 1 mole of a gas occupies volume 1.00×10^{-2} m^3 in a gas cylinder whose pressure is equal to:
A) 227K
B) 300K✓
C) 370K
D) 390K

The value of pressure and volume of fixed mass of gas in thermometer at triple point of water $P_t = 1.00 \times 10^5$ Pa and $V_t = 1 \times 10^{-3}$ m^3. When P = 1.1×10^5 Pa and V = 1.2×10^{-3} m^3. Then temperature of gas is:
A) 361K✓
B) 298 K
C) 373K
D) 250K

37. A point charge at distance 'x' from another point charge experiences a force F of repulsion, which graph shows relationship of force F to 'x':



The Coulumbs force between two point charges q1 = 1c and q2 is 2N. Where distance between them is 3m, the charge q2 is:
A) 1 × 10 – 9 C✓
B) 1×10^9 C
C) 2×10^9 C
D) 4×10^{-9} C

39. Electric field strength at position vector r = (4i + 3j)m caused by point charge q

= 5uC placed at origin is:
A) 1440i + 1080j V/m✓
B) 1240i + 1280j N/C
C) 1440i + 1080j N/m
D) 1240i + 1080j N/C

40. 2.00 × 106 e passing through a conductor in 1 millisecond. Electric current through conductor is:
A) 3.2×10^{-10} A✓
B) 32.0×10^{-9} A
C) 320×10^{-10} A
D) 0.320×10^{-10} A

41. A carbon resistor connected to a battery of 50V and 2A current is passing through it. If voltage is increased to 75V then current will be:
A) 1.5 A
B) 3A✓
C) 4.5 A
D) 6A

Effective resistance between point A and B is:



A) 40 Ohms
B) 50 Ohms
C) 10 Ohm✓
D) 30 Ohms

43. Electric current is flowing through the circuit as shown in figure, what will be the direction of magnetic lines of force:



A) Clockwise✓
B) Anticlockwise
C) From top to bottom
D) From bottom to top

The magnetic flux linked with a solenoid of area 'A', having 'N' turns at right angle to magnetic field is:
A) NBA✓
B) BA
C) 1/2NBA
D) BAcos (theeta)

45. A charge projected with velocity of 10m/s in a magnetic fields of 10T at an angle of 60°, if force exerted on charge is 2.78 × 10 – 17 N, then value of charge is:
A) 1.6×10^{-19} C
B) 2.7×10^{-19} C
C) 3.2×10^{-19} C✓
D) 4.8×10^{-19} C

46. The value of magnetic flux is 20Wb, when magnetic lines of force containing magnetic field strength of 1T passing through unit area of $10m^2$, then angle between magnetic field and unit area is:
A) 360°
B) 180°✓
C) 90°
D) 45°

47. A loop of 5 turns of wire is placed in uniform magnetic field of 0.5T, then area of loop shrinks at a constant rate of 10 m^2/s, the emf induced is:

A) 2.5 V
B) 25V✓
C) 250 V
D) 0.25 V

The phase at negative peak of AC voltage is:
A) $\pi/2$
B) π
C) $3\pi/2$✓
D) $2\pi/3$

49. The mass of Radium atom decreases by 8.6×10^{-3} kg, mass defect equivalent to energy is:
A) 4.48 meV
B) 4.84 MeV
C) 3×10^2 MeV
D) 4.84 eV

50. Curie temperature of iron is:
A) 750 K
B) 500 K
C) 1023 K✓
D) 300 K

51. The galvanometer can be made sensitive by making the factor $\frac{BAN}{C}$:
A) Large✓
B) Small
C) Constant
D) Zero

52. The power factor of RL-series circuit is:
A) 0
B) 1
C) Less than 1✓
D) More than 1

The moderator used in a nuclear reactor is:
A) Sodium
B) Uranium
C) Graphite✓
D) Cadmium

54. In Pakistan, the frequency of A.C. supply is:
A) 100 Hz
B) 50 Hz✓
C) 220 Hz
D) 60Hz

55. The mean value of A.C. in a cycle is:
A) 1
B) 0✓
C) I_0
D) $\frac{I_0}{\sqrt{2}}$

Selenium is:
A) Insulator in light
B) Insulator in dark✓
C) Conductor in dark
D) Semiconductor in dark

57. The ratio of potential barriers of Ge to Si at room temperature is:
A) 7 : 3
B) 1 : 3
C) 2 : 5
D) 3 : 7✓

58. A PN-junction cannot be used as:
A) Rectifier
B) Amplifier
C) Detector
D) LED✓

59. K_α - X rays are produced du to transition of electrons from:
A) K to L shell
B) L to K shell✓
C) M to K shell
D) M to L shell

Heat generated by a 40 W bulb in one hour is:
A) 140 J
B) 1440 J
C) 1400 J
D) 144000 J✓

61. The activity of radioactive sample:
A) Is constant
B) Increases with time
C) Decreases linearly with time
D) Decreases exponentially with time✓

62. A charged particle enters in a strong magnetic field, its K.E.:
A) Remains constant✓
B) Increases
C) Decreases
D) Increases then decreases

63. The quantity $\frac{h}{m_e c}$ has the dimensions of:
A) Length✓
B) Time
C) Mass
D) Energy

A real transformer does not change:
A) Voltage level
B) Current level
C) Frequency level✓
D) Power level

65. Two charges 1 μc separated by 20 cm, the ratio of electrical forces acting on them will be:
A) 1 : 2
B) 1 : 5
C) 1 : 1✓
D) 5 : 1

66. In N-type material, minority charge carriers are:
A) Free electrons
B) Holes✓
C) Protons
D) Mesons

67. The factor $\frac{h}{m_e c}$ in Compton effect has the dimensions of;
A) Pressure
B) Length✓
C) Mass
D) Momentum

68. Galvanometer can be made more sensitive if the value of factor $\frac{C}{NAB}$ is:
A) Made large
B) Made small✓
C) Remained constant
D) Made zero

Planck's constant h is expressed as:
A) J.S✓
B) $\frac{J}{S}$
C) $\frac{J}{C}$
D) J.C

70. Power dissipated in pure inductor over a complete a.c. cycle is:
A) Large
B) Small
C) Infinite
D) Zero✓

71. The number of neutrons in the nucleus is:
A) $N = A - Z$✓
B) $N = A + Z$
C) $N = \frac{A+Z}{2}$
D) $N = \frac{A-Z}{2}$

72. [illegible] stored per unit volume in magnetic field is called:
A) Electric flux B) **Energy density✓**
C) Work D) Power

Which one is photo conductor:
A) Copper B) **Selenium✓**
C) Mercury D) Aluminium

74. **The size of base region in a transistor is of the order of:**
A) 10^{-4} m✓ B) 10^{-1} m
C) 10^{-3} m D) 10^{-2} m

75. **Radiations emitted by human body at normal temperature 37°C lies in:**
A) X-ray region B) **Infrared region✓**
C) Visible region D) Ultraviolet region

76. **The value of peak to peak voltage is:**
A) V_o B) $-V_o$
C) $\sqrt{2}V_o$ D) **$2V_o$✓**

The numerical value of black colour in carbon resistors is:
A) **0✓** B) 1
C) 2 D) 3

78. **Working principle of transformer is:**
A) Self-induction B) Faraday's law
C) **Mutual induction✓** D) Electromagnetic induction

79. **Filament in C.R.O:**
A) Controls the number of electrons B) Controls the brightness of screen
C) Has negative potential D) **Emits electrons✓**

The distance between any two consecutive crests or troughs is called_____?
A) frequency B) period
C) **Wave length ✓** D) phase difference

81. **The Leaning Tower of Pisa is located in which country?**
(A) Switzerland (B) **Italy✓**
(C) Malta
(D) The Netherlands

82. **U Thant was the first UN Secretary General from Asia. To which country did he belong to?**
(A) Thailand (B) Cambodia (C) Japan (D) **Burma✓**

83. **The Pirpur Report on the brutalities of the Congress Ministries 1937-39, was compiled by:**
(A) A.K. Fazl-ul-Haq (B) **Raja Muhammad Mehdi✓**
(C) Nawab Salim Ullah Khan (D) M. Sharif

84. **The British parliament passed Indian Independence Act on:**
(A) **3 June 1947✓** (B) 14 June 1947 (C)14 July 1947 (D)24 July 1947

China to host 3rd Asian Youth Games in Shantou from_____.
(A) Nov 10, 2021 (B) Nov 15, 2021
(C) **Nov 20, 2021✓** (D) Nov 22, 2021

86. **"The Cockroach," a satirical new Brexit novella, is authored by_____.**
(A) Leo McEwan (B) Iriel McEwan (C) **Ian McEwan✓** (D) Lee McEwan

87. **Which Prophet is most mentioned in the Holy Quran?**
(A) Jesus (A.S) (B) Dawood (A.S) (C) **Moses (A.S) ✓**

88. **"Sahaif" revealed on Idress (A.S) were?**
(A) **30✓** (B) 40 (C) 50

89. **Lines of equal distribution of pressure are called:**
(A) Isopleths (B) Isotherms
(C) **Isobars✓** (D) None of these

90. **According to Ferret's Law, winds are deflected:**
(A) **To their right in the northern hemisphere✓** (B) To their left in northern hemis-phere
(C) Not deflected at all (D) None of these

Provide the missing number:
8 4 32 7 5 ....
(A) 33 (B) 11 (C) 17 (D) **35✓**

92. **Who developed algebra?**
(A) **Muhammad Ibn Musa Khawarizmi✓** (B) Ibn Sina
(C) Euclid (D) Jabir ibn Hayyan

93. **She _______ a bath when the telephone bell rang.**
(A) Took (B) **Had taken✓**
(C) Had been taking (D) Was taking

94. **I _______ if I were you.**
(A) Shall apologise (B) Apologise
(C) **Should apologise✓** (D) Was apologising

Which vitamin is provided by sunlight to the body?
(A) Vitamin A (B) Vitamin B
(C) Vitamin C (D) **Vitamin D✓**

96. **The enzyme-linked immunosorbent assay (ELISA) is used to detect:**
(A) **Antibodies✓** (B) Pathogens
(C) Tissues (D) Chemicals

97. **_______ key is used to cancel the current operation.**
(A) Alt (B) Caps Lock (C) **Esc✓** (D) Num Lock

98. **Arrow keys are also known as:**
(A) Function keys (B) **Cursor Control keys✓**
(C) Toggle keys (D) Special keys

99. نیکی کر ـــــ میں ڈال
(A) کنویں (B) جیب (C) دریا✓ (D) کشکول

100. ہمارا قومی ترانہ کس شاعر نے تخلیق کیا؟
(A) فیض احمد فیض (B) ساحر لدھیانوی (C) حفیظ جالندھری✓ (D) جوش ملیح آبادی

Paper Code
K

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET.❷Write PAPER CODE on your ANSWER SHEET carefully.❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer.❼Sign the Answer Sheet in the box provided at the bottom corner.❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-11

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Two forces of 5 N and 7 N can produce a resultant of:**
   A) 0N B) 1N
   C) 10N✓ D) 35N
2. **The number of significant figures in 0.005005 are ________.**
   A) 2 B) 3
   C) 4✓ D) 7

A car starts from Lahore and goes 60 km north towards Gujranwala. After travelling 60km, the car immediately turns round and returns to Lahore. The total time for this round trip is 2 hours. The magnitude of average velocity of the car for this round trip is ________.
   A) 60 km/hour B) 120 km/hour
   C) 30 km/hour D) 0✓

4. **The term mass refers to the same physical concept as that of ________.**
   A) Force B) Weight
   C) Volume D) Inertia✓
5. **The amount of work required to stop a moving object is ________.**
   A) The mass of the object times its acceleration
   B) The mass of the object times its velocity

   C) The kinetic energy of the object✓ D) The velocity of the object

The momentum of an object at any particular is and of time is independent of its ________.
   A) Acceleration✓ B) Mass
   C) Velocity D) Inertia

7. **Sphere A has mass with and is moving with velocity v. It makes a head on elastic collision what a stationary sphere B of mass 2m. After the collision their speeds (V_A and V_B) are ________.**
   A) -v, o✓ B) o, v/2
   C) -v3, 2v/3 D) -2v/3, v/3
8. **An ice skater with rotational inertia I_o is spinning with angular speed w_o. She pulls her arms in, thereby increasing her angular speed of $4w_o$. Her rotational inertia is then ¼.**
   A) I_o B) $I_o/2$
   C) $I_o/4$✓ D) $4I_o$

If the radius of earth is expressed by R and mass of the earth is represented by M, the ratio of gravitational acceleration (g) to the universal gravitational constant (G) i.e., (g/G) on the surface of the earth is ________.
   A) M/R^2✓ B) R^2/M
   C) MR^2 D) R/M

10. **A spring scale is calibrated in newtons and is used to weigh sugar. If it were possible to weigh sugar at the following locations, the buyer will get the most sugar in newtons at ________.**
   A) At the equator B) At the north pole
   C) On the moon D) At the center of the earth✓
11. **The hydraulic automobile jack works on the basis of ________.**
   A) Pascal's principle✓ B) Archimedes principle
   C) Hooks law D) Newton's 3rd law of motion
12. **At high altitudes some persons feel that the blood is flowing out of the nose or ear. This is because ________.**
   A) Density of blood decreases at high altitude
   B) Atmospheric pressure decreases there✓
   C) Blood pressure increases at high altitude
   D) Percentage of oxygen in air decreases

A body of mass m moving at a constant velocity v hits another body of the same mass moving with a velocity V/2 but in the opposite direction and sticks to it. The common velocity after collision is ________.
   A) v/4✓ B) v/2
   C) v D) 2v

14. **The equation of state for n moles of a ideal gas is PV = nRT. SI unit for the universal gas constant (R) is ________.**
   A) Erg K^{-1} $mole^{-1}$ B) Erg K mole
   C) Joule K^{-1} $mole^{-1}$✓ D) Joule K^{-1} $mole^{-2}$
15. **The second law of thermodynamics when stated with reference to heat engine is called ________.**
   A) Kelvin statement✓ B) Clasius statement
   C) Zeroth law D) Curie's law

The zeroth law of thermodynamics helps us to define ________.

A) Internal energy B) Temperature✓
C) Thermal equilibrium D) Heat capacity

17. Metal pipes used to carry water, sometimes burst in the winter because ________.
A) Metal contracts more than water B) Metal become brittle when cooled
C) Ice expands when it melts D) Water expands when it freezes✓

18. The buildings are kept cooler in summer with light colored shades instead of dark colored windows. This is because light colored shades ________.
A) Refle more sunlight✓ B) Absorb more sunlight
C) Have a lower thermal conductivity D) Transmit more sunlight

19. The difference between the molar specific heat at constant pressure and the molar specific heat at constant volume for an ideal gas is known as ________.
A) The Boltzmann's constant B) The avogadro's number
C) The Universal gas constant✓ D) Heat capacity

If a heat engine is doing a positive work in each cycle while losing some energy as heat, with no heat energy input, is a clear voltation of ________.
A) The 3rd law of thermodynamics B) The 2nd law of thermodynamics
C) The 1st law of thermodynamics✓ D) The zeroth law of thermodynamics

21. If λ is the wavelength of each of the component sinusoidal traveling waves that from a standing wave, the distance between adjacent nodes in the standing wave is ________.
A) $3\lambda/4$ B) $\lambda/4$
C) $\lambda/2$✓ D) λ

22. If the pitch of an approaching siren is increasing, it is apparently due to increase in its ________.
A) Speed B) Wavelength
C) Frequency✓ D) Amplitude

23. The process of waves appearing with different intensity at a point where a number of waves pass through a point in a medium is known as ________ of wave.
A) Interference✓ B) Diffraction
C) Polarization D) Refraction

If a_1 and a_2 the amplitudes of two waves in Young's double slit experiment, then the maximum intensity of intensity of interference fringe is ________.
A) $(a_1 + a_2)$✓ B) $(a_1 - a_2)$
C) $a_1 + s_2$ D) $a_1 - a_2$

25. In Young's double slits experiment if the separation between the slits is reduced to half and the distance of the screen from the slits is doubled, then the fringe width is ________.
A) Quadrupled✓ B) Double
C) Halved D) Remain unchanged

26. The produce circularly polarized light, the phase difference between two perpendicularly polarized light rays of equal magnitude should be ________.
A) 45° B) 180°
C) 90°✓ D) 360°

27. Which of the type of waves cannot be polarized?

A) Electromagnetic waves B) Sound waves✓
C) X-rays D) Radio waves

A tuning fork produces waves in a medium. If temperature of the medium changes, then ________ of the waves will change, as well.
A) Wavelength✓ B) Frequency
C) Time period D) Amplitude

29. Which of the following properties make difference between stationary and progressive waves?
A) Amplitude B) Phase of the wave✓
C) Frequency D) Propagation of energy

Non Permanent members of the UN security council are elected for a fixed term of:
A) 1 year B) 2 years✓
C) 3 years✓ D) 4 years

31. The electric field due to a uniform distribution of charge on a spherical shell is zero.
A) Nowhere B) Everywhere
C) Only outside the shell D) Only inside the shell✓

32. An electron travels due north through a vacuum in a region of uniform magnetic field B that is also directed due north. The electron will ________.
A) Slow down B) Speed up
C) Be unaffected by the field✓ D) Stop instantly

The statement that magnetic field liens form closed loops is a direct consequence of ________.
A) Gauss's law for magnetism✓ B) Ampere's law
C) Faraday's law D) Gauss's law of electricity

34. A person with nearsightedness will use eyeglasses having ________.
A) Bifocal lenses B) Plano-convex lens
C) Diverging lens✓ D) Converging lens

35. Light from some stars shows an apparent change in frequency because of ________.
A) Reflection B) Relative motion✓
C) Refraction D) Diffraction

36. The electric flux is negative when angle between A and E is ________.
A) 0° B) 45°
C) 90° D) Greater than 90°✓

Newton's law of gravitation between two mass particles resembles with ________.
A) Newton law of motion B) Coulomb's law of electrostatic charges✓
C) Law of conservation of mass D) Law of conservation of energy

38. The speed of charging or discharging a capacitor depends upon the product of capacitance and ________.
A) Resistance✓ B) Current
C) Voltage D) Potential difference

39. The magnitude of the force on a moving charge carrier is maximum when angle between the velocity of the carrier and the magnetic field is ________.
A) 0° B) 90°✓

C) 180° D) 45°

The armature current in a DC motor is maximum when the motor has ______.
A) Picked up maximum speed B) Just started✓
C) Intermediate speed D) Just been switched off

41. A charge 'q' is moving in a magnetic field. If the velocity of the charge is doubled somehow, the force acting on it would ______.
A) Become half B) Become double as well✓
C) Become 4 times D) Reduce 4 times

42. Which Maxwell's equation predicts that a monopole doesn't exist?
A) $\nabla . D = Pr$ B) $\overline{\nabla}.\overline{B} = 0$✓
C) $\nabla \times E = \sigma B/\sigma t$ D) $\nabla \times = \sigma D/\sigma t + \overline{\upsilon}$

43. Electromagnetic waves carry ______.
A) Mixed charge B) Positive charge
C) Negative charge D) No charge✓

Two parallel wires carrying current in opposite direction will ______.
A) Repel each other✓ B) Attract each other
C) Have no effect on each other D) Cancel out their individual fields

45. When a neutrons is captured by a proton, it results in the formation of ______.
A) Deuteron and a γ-ray photon✓ B) 2 deuterons and 4 γ-ray photons
C) Deuterons and x-rays D) 4 deuterons and 2 γ-ray photons

46. The sub-atomic particles having mass equal to greater than that of protons are ______.
A) Nucleons B) Bosons
C) Mesons D) Baryons✓

47. Photodiode works when it is ______.
A) Unbiased B) Place below room temperature
C) Forward biased D) Reverse biased✓

48. One proton is composed of ______.
A) Two down and one up quarks B) Two up and one down quarks✓
C) Two charm and one of quarks D) Two bottoms and one top quarks

In nuclear reactors, moderator are used to ______.
A) Absorb thermal energy B) Absorbs neutrons
C) Accelerate neutrons D) Slow down neutrons✓

50. Which of the following are Not electromagnetic radiations?
A) Ultra violet rays B) Visible light
C) Cathode rays✓ D) Radio waves

51. The rate of decay of a radioactive element ______.
A) Is constant B) Decreases inversely with time
C) Increases directly with time D) Decreases exponentially✓

52. Which of the following detector of radiations is the most efficient?
A) Solid state detector✓ B) Wilson's cloud chamber
C) Scintillation counter D) Gleger counter

A monochromatic red beam of light cannot be ______.
A) Dispersed✓ B) Reflected
C) Refracted D) Focused

54. Crystalline materials are divided into 7 crystal system. The number of Bravas lattices is:
A) also 7 B) 14✓
C) 37 D) 227

55. The packing fraction of face-centered cubic (f_{cc}) unit cell is:
A) 54% B) 52%
C) 46% D) 74%✓

56. In order to produce diffraction in crystals with X-rays, the spacing between the consecutive lines of grating should be of the order of ______ angstroms.
A) Few✓ B) Hundreds of
C) Thousands of D) Millions of

57. In 1912, Laue suggested that a crystal can serve as a ______ grating for X-ray diffraction.
A) Zero dimensional B) One-dimensional
C) Two dimensional D) Three dimensional✓

The most probable position of a particle in one-dimensional potential well of width "L" in the first quantum state is ______.
A) L/2✓ B) L/3
C) L/4 D) 2L/3

59. According to band theory a freely moving electron inside a metal experiences ______ potentials of positive ions.
A) Constant B) Varying✓
C) Periodic D) Minimum

the magnetic dipole moment of neighboring atoms are anti-parallel and unequal for ______ magnetic materials.
A) Dia✓ B) Para
C) Ant-ferro D) Fero

61. Magnetic dipole moment per unit volume of a material is termed as ______.
A) Magnetic susceptibility B) Coercivity
C) Magnetization✓ D) Magnetic induction

62. With increase of temperature, the Fermi energy level ______ in n-type semi-conductors.
A) Moves towards valence bands B) Moves towards conduction band✓
C) Remains unchanged D) Oscillates

63. A rectifier is a device that ______.
A) Amplifies input power B) Amplifies input voltage
C) Converts DC into AC D) Converts AC into DC✓

64. The energy band gap in a superconductor is maximum at ______.
A) Critical temperature B) Below critical temperature
C) 0 K D) Above critical temperature✓

The intensity of an applied magnetic field decreases ______ with depth from the surface of a superconductor.
A) Linearly B) Exponentially✓
C) Logarithmically D) Inversely

66. The attenuation of electromagnetic waves in a good conducting medium is ______.

A) Very low B) Low
C) High D) Very high✓

67. In a good conductor, the skin depth is ________ proportional to the attenuation constant.
A) Directly B) Inversely✓
C) Exponentially D) Logarithmically

The quantum number *n* is most closely associated with what property of the electron in a hydrogen atom?
A) Magnetic moment B) Energy✓
C) Spin angular momentum D) Orbital angular momentum

69. A LASER beam can be sharply focused because it is ________.
A) Highly directional✓ B) Higly coherent
C) Intense D) Plane polarized

70. The Fermi Dirac occupancy probability P(E) varies between ________.
A) 1 & infinity B) Zero & infinity
C) 0 & 1✓ D) -1 & +1

71. Which of the following is NOT needed in a nuclear fission reactor?
A) Accelerator✓ B) Coolant
C) Moderator D) Fuel

Exclusive OR (XOR) logic gates can be constructed from ________.
A) OR gates and NOT gates B) AND gates and NOT gates
C) AND gates, OR gates and NOT gates
D) Combining time OR gates✓

73. The cause of magnetism in magnetic materials is ________.
A) Spinmoun of electrons B) Orbital motion of electrons
C) Vibration of atoms in magnetic field
D) Spin and orbital motion of electrons

74. Above ________ temperature an anti-ferromagnetic substance becomes paramagnetic.
A) Transition temperature B) Neel temperature
C) Curie temperature D) Critical temperature✓

75. Number of independent formulation(s) of quantum mechanics are ________.
A) 1 B) 2
C) 3✓ D) 4

The quanta of lattice vibration is known as ________.
A) Photons B) Excitons
C) Poltroons D) Phonons✓

77. Which of the following light is suitable for maximum resolution?
A) Red B) Green
C) Blue✓ D) Yellow

78. The tangential acceleration of a point on a rotating object is the product of the distance of the point from the axis of rotation and the:
A) Angular velocity B) Angular acceleration✓
C) Angular displacement D) Linear acceleration

79. Two masses, M and m are hung vertically down to the earth over a mass less, frictionless pulley. If M > m than the downward acceleration of mass M is ________.

A) g B) $\frac{(M-m)g}{M+m}$✓
C) $\frac{Mg}{m}$ D) $\frac{Mmg}{M+m}$

A body of mass m is moving in a circle of radius r with a constant speed v. The work done when body completes one revolution is ________.
A) $\frac{mv^2}{r}\times(2\pi r)$ B) $\left(\frac{mv^2}{r}\right)\times(\pi r)$
C) $\left(\frac{mv^2}{r}\right)\times(2r)$ D) Zero✓

81. On which river, the Baglihar Dam is constructed by India?
(A) Chenab✓ (B) Jhelum
(C) Indus (D) Setluj

82. Which one of the following countries expelled the Palestine Liberation Organization (PLO) in 1970?
(A) Syria (B) Lebanon
(C) Israel (D) Jordan✓

83. Which of the following leaders had translated the Lahore Resolution from English to Urdu on 23rd March 1940:
(A) Maulana Zafar Ali Khan✓
(B) Chaudhri Khaleeq-uz-Zaman
(C) Dr. Muhammad Alam
(D) Sir Sikandar Hayat

84. The first Urdu newspaper (Daily) published after the creation of Pakistan was:
(A) Mashriq (B) Imroze✓
(C) Watan (D) None of these

Which two countries have been banned from participating in Tokyo Olympics in weightlifting competition by IWF on disciplinary grounds?
(A) Indonesia and Malaysia
(B) Malaysia and Thailand✓
(C) Indonesia and Thailand
(D) Thailand and Russia

86. The official name of the virus causing the COVID-19 given by WHO is____.
(A) SARS-CoV 1 (B) MERS -CoV 1
(C) SARS-CoV 2✓ (D) MERS-CoV 2

87. Who is called "Khateeb-ul-Anbia"?
(A) Hood (A.S) (B) Nuh (A.S)
(C) Shoaib (A.S) ✓

Who could play flute very well?
(A) Hood (A.S)✓ (B) Nuh (A.S)
(C) Yaqoob (A.S)

89. Thermal equator is located:
(A) At the equator (B) North of equator✓
(C) South equator (D) None of these

90. Orographic rainfall is affected by:
(A) Relief features✓ (B) Distance from the sea
(C) Distance from the equator (D) None of these

☞ The fraction 101 in decimal form is:
(A) 101.00027✓ (B) 101.0027
(C) 101.027

92. When 36 is written is simplest fractional form, the sum of numerator is:
(A) 10✓ (B) 34
(C) 20 (D) None

93. The contractor insisted that he _____ the work before the end of March.
(A) Will complete (B) Would complete✓
(C) Was completing (D) Will be completing

94. We _______ to go to a movie next week, but we find we can't go as we have already spent all the money we had.
(A) Plan (B) Will plan (C) Are planning
(D) Were planning✓

☞ What is chlamydomonas?
(A) An algae✓ (B) A fungus (C) An animal (D) A fossil

96. What is the most common salt in seawater?
(A) Calcium Carbonate (B) Potassium Chloride
(C) Sodium Chloride✓ (D) Magnesium Sulphate

97. _______ input device is not a pointing device.
(A) Scanner✓
(B) Pointing stick
(C) Digitizing tablet (D) Touchpad

☞ _______ pointing devices has a vertical handle like a gearshift lever.
(A) Light pen (B) Pointing stick
(C) Trackball (D) Joystick✓

99. لوک فنکار پٹھانے خان کا آبائی شہر ہے۔
(A) بہاولپور (B) کوٹ ادو✓
(C) بھکر (D) ملتان

100. مشہور افسانہ 'گڈریا' کس کی تصنیف ہے؟
(A) پروین عاطف (B) اشفاق احمد✓
(C) غلام عباس (D) کرشن چندر

Paper Code
L

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper & Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☞ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-12

PUBLIC SERVICE COMMISSION

WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. A vector is a tensor of rank:
A) 1✓ B) 2
C) 3 D) 4

2. If [A, B] = 0, then two operators $\hat{A}$ & $\hat{B}$ are said to be:
A) Anticommute B) Do not commute
C) Commute✓ D) None of these

☞ If at + div j = 0 is called:
A) Laplace's equation B) Equation of continuity✓
C) Tensor equation D) Equation of polar coordinates

4. First law of thermodynamics is a special form of:
A) Law of conservation of energy✓ B) Law of conservation of energy
C) Law of inertia D) None of these

5. In spherical polar coordinates, the range of variable φ is from:
A) $0 \to \pi/2$ B) $\pi/2 \to \pi$
C) $0 \to \pi$ D) $0 \to 2\pi$✓

6. Moment of Inertia is a tensor of rank:
A) 3rd✓ B) 2nd

C) 0^{th} D) 4^{th}

The Range of projectile will be same when the angle of projection are:
A) 20° & 80° B) 30° & 50°✓
C) 25° & 50° D) 20° & 45°

8. The work done by compound pendulum in one complete oscillation is:
A) Zero✓ B) Equal to K.E. of pendulum
C) Equal to P.E. of pendulum D) Equal to total energy of pendulum

9. A man inside an artificial satellite feels weightlessness because the force of attraction due to the earth is:
A) Zero at the pole B) Equal to centripetal force✓
C) Balance the force of attraction due to the moon
D) None of these

The component of a vector P along y-axis is IPI/2, the angle made by the vector with horizontal is:
A) 60° B) 45°
C) 30°✓ D) 90°

11. ERG stands for:
A) Electro Radio Graphy✓ B) Energy Radio Graphy
C) Electric Retion Graphy D) None of these

12. It is possible to distinguish between transverse & longitudinal waves by studying the property of:
A) Polarization✓ B) Inerference
C) Diffraction D) Any of them

13. Which one of the following represents a travelling wave:
A) A Cos (wt + φ) B) A Cos (wt – kx)
C) A Sin (wt + φ)✓ D) A Sin (wt + kx)

Which one of the following waves cannot be polarized:
A) X-rays B) Sound waves✓
C) Radio waves D) Ultraviolet rays

15. Alternative current is converted to direct current by a:
A) Motor B) Dynamo
C) Transformer D) Rectifier✓

16. At resonance the value of power factor in an L.C.R. series circuit is:
A) Zero B) 1/2
C) Infinite D) One✓

17. Two parallel wires carrying current in the opposite direction:
A) Repel each other✓ B) Attract each other
C) Do not attract each other D) Get rotated perpendicular to each other

If the distance between two charges is doubled, the Coulomb force will become:
A) Electron✓ B) Double
C) Half D) Same

19. An electric or magnetic field cannot accelerate:
A) Electron B) Neutron✓
C) Half D) Same

20. The penetrating power of x-rays increases with:

A) Increase in its velocity B) Decrease in its velocity
C) Increase in its intensity✓ D) Decrease in intensity

21. Some amount of heat given to gas under isothermal condition will result in:
A) Doing external work✓ B) Rise in temperature
C) Doing external work & change in temperature
D) An increase in internal energy

22. Z-component of r x p:
A) $ZP_y - YP_z$ B) $ZP_y + YP_z$
C) $XP_y - YP_x$✓ D) $XP_y + YP_x$

The Larges class of elementary particle consists of the:
A) Photons B) Leptons✓
C) Masons D) Baryons

24. The quantum number which is not involved in describing the orbit of an atomic electron is:
A) n B) m
C) l✓ D) s

25. The ionization energy of an atom relative to binding energy of its nucleus is:
A) Greater B) The same
C) Smaller✓ D) Sometimes greater & sometimes smaller

Macroscopic coordinates do not involve special assumption about (I) structure of matter (II) radiations (III) fields.
A) Only (I) is true B) Only (II) is true
C) Only (III) is true D) All are true✓

27. If two system "A" & "B" are in thermal equilibrium with a system "C", then ________ are not in equilibrium.
A) A & C B) C & B
C) B & C D) None✓

28. The following is an intensive coordinate of a thermodynamics system in equilibrium sate:
A) Volume B) Pressure✓
C) Charge D) Total polarization

29. The type of work which cannot be described in macroscopic thermodynamics:
A) Hydrostatic work B) External work
C) Internal work✓ D) Adiabatic work

30. In thermodynamics, work done by the system is taken as:
A) Positive✓ B) Negative
C) Zero D) None

The SI unit of specific heat capacity is:
A) J/Kg-K✓ B) J/Kg
C) J/K D) JKg/K

32. All natural processes are:
A) Reversible B) Irreversible✓
C) Cyclic D) Non-dissipative

33. When a horse pulls a wagon, the force that causes the horse to move forward is the force:
A) He exerts on the wagon B) The wagon exerts on him
C) He exerts on the ground D) The ground exerts on him✓

34. The minimum number of unequal forces whose vector sum can equal zero is:
A) 1 B) 2
C) 3✓ D) 4

A force of 3n acts perpendicularly to a force of 4n. There resultant has a magnitude of:
A) 1n B) 5n✓
C) 7n D) 12n

36. A body in equilibrium may not have.
A) Velocity B) Acceleration✓
C) Momentum D) Kinetic energy

37. In order to cause a moving body to pursue a circular path, it is necessary to happy:
A) Inertial force B) Gravitational force
C) Centrifugal force D) Centripetal force✓

A hole is drilled through the earth along a diameter & a stone dropped into it. When a stone is at the center of the earth it has:
A) Mass✓ B) Weight
C) Acceleration D) Potential energy

39. The rotational analog of force in linear motion is:
A) Moment of inertia B) Angular momentum
C) Torque✓ D) Weight

40. According to Hooke's Law, the force needed to elongate an elastic body by an amount "s" is proportional to:
A) s B) 1/s
C) s^2✓ D) $1/s^2$

41. A sharing stress that acts on a body affects its:
A) Length B) Width
C) Volume D) Shape✓

In simple harmonic motion, there is always a constant ratio between the displacement of the mass and its:
A) Velocity B) Acceleration✓
C) Period D) Energy

43. Waves transmit from one place to another:
A) Mass✓ B) Amplitude
C) Wavelength D) Frequency

44. Of the following properties of a wave, the one that is independent of the other is its:
A) Amplitude✓ B) Velocity
C) Wavelength D) Frequency

45. When a sound wave goes from air into water, the quantity that remains unchanged is its:
A) Speed B) Amplitude
C) Frequency✓ D) Frequency

Two blocks of lead, one twice as heavy as the other, are both at 50°C. The ratio of the heat content of the heavier block to that of the lighter block is:
A) 1/2 B) 1
C) 2✓ D) 4

47. Heat is closely related to:

A) Momentum B) Energy✓
C) Temperature D) Friction

48. Sublimation refers to:
A) The vaporization of solid without first becoming a liquid✓
B) The melting of a solid
C) The vaporization of a gas into a liquid
D) Condensation of a gas into a liquid

Under conditions corresponding to its triple point, a substances:
A) Is in the solid state B) Is in the Liquid state
C) Is in the gaseous state
D) May be in any or all of the above states✓

50. The ratio between the energy dissipated in some process & the heat the appears as a result is called:
A) Triple point B) Specific heat
C) Kilocalorie D) Mechanical equivalent of heat✓

The smallest sub-division of a compound that exhibit is characteristics properties is called:
A) An elementary particles B) An atom
C) A molecule✓ D) An element

52. The energy of the molecular motion appears in the form of:
A) Friction B) Heat
C) Temperature✓ D) Potential energy

53. The physics underlying the operation of a refrigerator most closely resemble the physics underlying:
A) A heat engine✓ B) The melting of ice
C) The freezing of water D) The evaporation of water

54. The law that governs the force between electric charges bears the name of:
A) Newton B) Bernoulli
C) Coulomb✓ D) Ampere

55. The electron volt is a unit of:
A) Charge B) Potential difference
C) Energy✓ D) Momentum

A certain wire has a resistance "R". The resistance of another wire, identificial with the first except for having twice its diameter, is:
A) ¼ R✓ B) ½ R
C) 2R D) 4R

57. The separation between the plates of a parallel-plate capacitor whose original capacitance was "C", is doubled. The capacitance is now:
A) ¼ C B) ½ C✓
C) 2C D) 4C

58. The time required to charge a capacitor depends upon:
A) The magnitude of the charge B) The applied potential difference
C) Its capacitance only
D) The product of its capacitance & the resistance in the circuit✓

59. A current is following north along a power line. The direction of the magnetic field above it, neglecting the earth's field is:
A) North B) East✓
C) South D) West

When a diamagnetic substance is inserted in a current carrying coil, the magnetic field:
A) Decreased✓ B) Unchanged
C) Increased D) First increase then decrease

61. The time required for a charged particle to make a complete revolution in a magnetic field does not depend upon:
A) Its mass B) Its charge
C) Its energy✓ D) The magnetic flux density

62. The fact that an electric field is produced in a conductor whenever magnetic lines of force move across it is referred to as:
A) Ampere's Law B) Ohm's Law
C) Faraday's Law✓ D) Lenz's law

63. Lenz's' law is a consequence of the law of conservation of:
A) Charge B) Momentum
C) Lines of force D) Energy✓

A dynamo is often set to generate electricity. It actually acts as a source of:
A) Charge B) Momentum✓
C) Lines of force D) Energy

65. The time required for a current to be established in a circuit depends upon:
A) The magnitude of the current✓ B) The applied potential difference
C) Its inductance only D) Its inductance & its resistance

66. Which of the following s not electromagnetic in nature?
A) Infrared ray B) Ultraviolet rays
C) Radar waves D) Sound waves✓

67. Beats are the results of:
A) Diffraction B) Constructive interference
C) Destructive interference
D) Constructive & Destructive interference✓

68. Longitudinal waves do not exhibit:
A) Refraction B) Reflection
C) Diffraction D) Polarization✓

A crucial experiment that led to the theory of relativity was performed by:
A) Michelson & Morley✓ B) Albert Einstein
C) Pavel Cerenkov D) Sarmuel ether

70. An observer moves past a stationary electron on the earth's surface. His instruments measure:
A) Only an electric field B) Only a magnetic field
C) Both electric & magnetic field✓ D) Neither electric nor magnetic field

71. Relative to the original photon, the photon that emerges from a collision with an electron has:
A) More energy B) More momentum
C) Higher frequency D) Longer wavelength✓

Modern physical theories indicate that:
A) All particles exhibit wave behavior
B) Only moving particle exhibit wave behavior✓
C) Only charged particles wave behavior
D) Only unchanged particles exhibit wave behavior

73. When a beam of light is used to determine the position of an object, the greatest accuracy is obtained if the light:
A) Is polarized B) Has short wavelength✓
C) Has long wavelength D) Has a low intensity

74. The total energy of an atomic electron is:
A) Less than zero✓ B) Zero
C) More than zero D) All of these

75. A hydrogen atom is in its ground state when its orbital electron:
A) Is within the nucleus B) Has a escape from the item
C) Is in its lowest energy level✓ D) Is stationary

The energy of a quantum states is primarily dependent upon the quantum number:
A) n✓ B) l
C) s D) m

77. The two electrons in a helium atom:
A) Occupy different shell B) Occupy different sub-shell
C) Have opposite spins✓ D) Have parallel spins

78. There are no expected lines absent from the spectra of:
A) Hydrogen✓ B) The Alkali metals
C) The inert gases D) The halogens

79. A molecule whose charge distribution is not perfectly symmetrical is called:
A) A polar molecule✓ B) A non-polar molecule
C) An electrolyte D) An organic molecule

Water is an excellent solvent because its molecules are:
A) Neutral B) Polar✓
C) Non-polar D) Covalent

81. Which actor played the role of Quaid-e-Azam Muhammad Ali Jinnah in the feature film "Jinnah" directed by Jamil Dehlavi?
(A) N. Wadia (B) Ben Kingsley
(C) Christopher Lee✓
(D) Peter O Togie

82. The Oscar Award winning film 'Slumdog Millionaire" is based on the book "Q and Q" written by:
(A) Hanif Qurershi (B) Shashi Tharor
(C) Vikas Swarup✓ (D) Manesh Bahl

83. The first foreign head of the state visited Pakistan after independence was the President of:
(A) India (B) Indonesia✓
(C) Iran (D) China

Sahibzada Abdul Qayyum (1863-1937) had rendered great services for the educational uplift of the Muslims of: -
(A) Balochistan (B) Punjab (C) Sindh (D) N.W.F.P.✓

85. Which country became the first to suspend the use of the video-conferencing tool Zoom by teachers on Apr 11, 2020?
(A) Sri Lanka (B) Singapore✓ (C) Malaysia (D) China

86. Recently, Opec + agreed to cut oil output by a record amount, representing around 10% of the global supply. As per the agreement the daily production will cut by_____.

(A) 9.5 million B/D (B) 9.6 million B/D
(C) 9.7 million B/D✓ (D) 9.8 million B/D

87. **Who is called "Zul-Nun"?**
(A) Moosa (A.S) (B) Younas (A.S)✓ (C) Jesus (A.S)

88. **Which Messenger made "Soap"?**
(A) Younas (A.S) (B) Nuh (A.S) (C) Saleh (A.S) ✓

Line graphs are used for depicting:
(A) Temperature of place✓ (B) Rainfall of a place
(C) Growth of population (D) None of these

90. **Meanders are created by:**
(A) River action✓ (B) Action of wind
(C) Action of glacier (D) None of these

91. **What is the difference between the biggest and the smallest fraction is:**
(A) $\frac{1}{6}$ ✓ (B) $\frac{1}{12}$ (C) $\frac{1}{20}$

92. **Which of the following fractions is the smallest?**
(A) $\frac{13}{16}$ (B) $\frac{15}{19}$ ✓ (C) $\frac{17}{21}$

93. **It _______ if the temperature had fallen any more.**
(A) Would snow (B) Would have been snowed
(C) Would have snowed✓ (D) Would have been snowing

94. **I can never forget what I _______.**
(A) Just read (B) Have just read✓
(C) Will read (D) Will just read

The organ in the body which accumulates iodine is:
(A) Pituitary gland (B) Thyroid gland✓
(C) Thymus (D) Parathyroid

96. **Who invented chronometer?**
(A) John Harrison✓ (B) Marconi
(C) Dalton (D) Samuel Francis

97. **_______ pointing device uses the sensors to detect the touch of a finger.**
(A) Touchscreen✓ (B) Light pen
(C) Pointing stick (D) Joystick

Imaging uses what device to input data.
(A) Tablet (B) Icon
(C) Barcode reader (D) Scanner✓

.99 'علی پور کا ایلی' ناول کس نے لکھا؟
(A) عبداللہ حسین (B) سمیع آ ہوجا (C)ممتاز مفتی✓ (D)مستنصر حسین تارڑ

.100 'خوشبو' کس شاعر کا دیوان ہے؟
(A) پروین شاکر✓ (B) جون ایلیا (C)جوش ملیح آبادی (D)احمد ندیم قاسمی

Paper Code: M

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original Model Paper-13

PUBLIC SERVICE COMMISSION

WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **The electric & magnetic fields without deflection have:**
A) Mass B) Speed✓
C) Momentum D) Energy

2. **Relative to the sum of the masses of its constituent nucleons, the mass of a nucleus is:**
A) Greater B) The same
C) Smallerv
D) Sometimes greater & sometimes smallest

The ionization energy of an atom relative to the binding energy of its nucleus is:.
A) Greater B) The same
C) Smaller✓
D) Sometimes greater & sometimes smaller

4. **Yukawa's theory suggest that nuclear forces arrives through the exchange of:**
A) Electrons B) Protons
C) Neutrons D) Masons✓

5. **The tunnel affect makes possible:**
A) Alpha decay✓ B) -ve beta decay

C) +ve beta decay
D) Gamma decay

6. A nucleus with an excess of neutrons may decay radioactively with the emission of:
A) A neutron
B) A proton
C) **An electron✓**
D) A positron

7. **The first phase of a nuclear reaction involves the formation of:**
A) An alpha particle
B) **A compound nucleus✓**
C) An isotope
D) A mason

Of the following elementary particles, the one that never decays in free space is the:
A) u-masons
B) Hypersons
C) **Protons✓**
D) Neutrons

9. **Unstable elementary particles heavier than the proton are called:**
A) Leptons
B) K-mesons
C) Strange particles
D) **Hypersons✓**

10. **A quantity not always conserve in the decay of elementary particles is:**
A) Electric charge
B) Lepton number
C) Baryon number
D) **Strangeness number✓**

11. **The grid is moved closer to the cathode without changing anything. The amplification factor of the valve will:**
A) **Increase✓**
B) Decrease
C) Remains unchanged
D) First decreases then increases

12. **On making grid potential excessively negative, plate resistance (r_p):**
A) Become zero
B) **Becomes infinite✓**
C) Remains same
D) Nothing can be decided

In an amplifier maximum voltage gain is obtained, when load resistance is equal to:
A) **Zero✓**
B) Infinity
C) Plate resistance
D) Unity

14. **The temperature co-efficient of resistance of a semi-conductor is:**
A) Constant
B) Positive
C) **Negative✓**
D) None of above

15. **For rectifying action we use:**
A) Choke
B) **Diode✓**
C) Transformer
D) Condenser

16. **AC. Plate resistance of a diode valve at saturation is:**
A) Zero
B) **Infinite✓**
C) Depends upon plate potential
D) None of these

L.D.R becomes essential when op-amp is used as a:
A) Comparator
B) Inverter
C) Non-inverter
D) **Night switch✓**

18. **Which is not the basic operation of Boolean variables:**
A) **YES operation✓**
B) NOT operation
C) AND operation
D) OR operation

19. **A forward biased p-n junction practically offers:**
A) Zero resistance
B) **Very low resistance✓**
C) Very high resistance
D) None of these

20. **A solid state detector basically:**

A) **A reverse biased p-n junction✓**
B) A forward biased junction
C) A p-n p transistor
D) A n-p-n transistor

21. **Basic unit of a worksheet into which data can be entered in Excel is called:**
A) **Cell✓**
B) T02 + able
C) Matrix
D) Box

A "Scanner" is a/an ________.
A) **Input Device✓**
B) Output Device
C) Storage Device
D) All of these

23. **A shop gives 4 points for every Rs. 75 spent by customers. Ali earned 36 points. How much did Ali spend at the store?**
A) Rs. 375
B) Rs. 450
C) Rs. 525
D) **Rs. 675✓**

24. **If two angles of a triangle are 60 degree each then what is the value of the third angle:**
A) 45 degrees
B) 50 degrees
C) **60 degrees✓**
D) 65 degrees

Convert to Passive Voice: "Who gave you permission to enter?"
A) **By whom were you given permission to enter.✓**
B) By whom was you given permission to enter.
C) By whom you were given permission to enter.
D) By whom was given the permission to enter to you.

26. **Fill in the blank: Abdul grabbed the boy and rolled him on the ground to ________ the flames.**
A) Discourage
B) Smoother
C) **Burn out✓**
D) Encourage

27. **Fill in the blank: "The plot of the novel was ________ it was completely incomprehensible.**
A) More complicated
B) So complicated
C) **So complicated that✓**
D) So complicated as

28. **Complete the proverb. "The early bird catches the ________."**
A) Seed
B) **Worm✓**
C) Prey
D) Lizard

Name the general type of mammals that gives birth to underdeveloped young that are kept in pouches during eseening period?
A) **Mrsupials✓**
B) Ruminants
C) Amphibians
D) Rodents

30. **Study of poisons is called:**
A) **Toxicology✓**
B) Oncology
C) Phrenology
D) Ergonomics

31. **The famous movie "Slumdog Millionaire" is based on the book "Q and A" who is the author of this book.**
A) Sashi Tharoor
B) HanifKureishy
C) **Vikasswarup✓**
D) Bapsi sidwa

The Bermuda triangle in the Atlantic ocean, is famous for:
A) Fiercest battles during the 2nd world war
B) Place where water is very
C) The point where German battleship
D) **The mysterious disappearances of ships / boots and aircrafts✓**

33. What was the real name of Genghis Khan?
A) Temujin✓
B) Ogadel
C) Chagatal
D) Timur

34. Under the 1973 constitution, protection of the Rights of Minorities is described in Article:
A) 34
B) 35
C) 36✓
D) 6

35. Who became the Frist Viceroy of India?
A) Canning✓
B) Elgin
C) Lawrance
D) Mayo

36. What is the ancient Greek name for River Jehlum.
A) Hydaspes✓
B) Hydroatis
C) Hydrophalia
D) Hesidros

June 2017 which country pulled out of the Paris Climate Agreement?
A) Venezuela
B) USA✓
C) Nicragua
D) Syria

38. Non Permanent members of the UN Security Council are elected for a fixed term of:
A) 1 year
B) 2 years✓
C) 3 years
D) 4 years

39. 'F' is maximum force acting on a conductor. Now if we change the direction of conductor by making an angle of 45° with the magnetic field then the force becomes:
A) $\frac{F}{2}$
C) $\frac{F}{\sqrt{2}}$ ✓
B) 2F
D) $\sqrt{2}F$

40. If we doubled all the parameters of the force acting on current carrying conductor and θ = 90° then magnetic force becomes:
A) Half
C) Eight-times✓
B) Double
D) Four-times

The force acting on current carrying conductor will be maximum if the angle between magnetic field and conductor is:
A) 0°
C) 90°✓
B) 30°
D) 60°

42. The shadow of the bones in X-rays photographic film appears lighter than the surrounding flesh due to:
A) Bones reflect greater amount of X-rays
C) Bones absorb greater amount of X-rays
B) Bones absorb less amount of X-rays✓
D) Bones totally reflect X-rays

43. The atom is excited to an energy level Ei from its ground state energy level Eo, the wavelength of the radiations emitted is:

A) $\frac{(E_o - E_i)}{hc}$
C) $\frac{hc}{(E_i - E_o)}$ ✓
B) $\frac{(E_i - E_o)}{hc}$
D) $\frac{E_i}{hc} - \frac{E_o}{hc}$

44. Which one of the following gas is the lasing or active medium in the laser tube?
A) Hydrogen
C) Neon✓
B) Helium
D) Carbon dioxide

When fluid is incompressible, the quantity is constant is:
A) Mass
C) Pressure
B) Density✓
D) Force

46. The minimum distance from the eye at which an object appears to be distant is:
A) 25 cm✓
C) 35 cm
B) 22 cm
D) 20 cm

47. Using the relation for the magnifying power Lo, M = 1 + d/f, if f = 5 cm and d = 25 cm then M will be:
A) 5
C) 6✓
B) 7
D) 8

48. Resonance occurs when the driving frequency is:
A) Greater than natural frequency
C) Less than natural frequency
B) Unequal the natural frequency
D) Equal to the natural frequency✓

49. The red shift measurement of Doppler effect of galaxies indicate that the universe is:
A) Expanding✓
C) Stationary
B) Contracting
D) Oscillating

During the decay of radioactive isotopes $^{232}_{90}X$ to a stable isotope, six α-particles and four β-particles are emitted, what is the atomic number 'Z' and mass number 'A' of the stable isotopes.
A) Z = 70, A = 220
C) Z = 82, A = 212
B) Z = 78, A = 212
D) Z = 82, A = 208✓

51. Cobalt 60 is used in medicine and is an intense source of:
A) α-particles
C) γ-rays✓
B) β-particles
D) Neutrons

52. In fluid flow, for the equation of continuity A1v1 = A2v2. If velocity of the fluid at one end is doubled, then what will be the cross-sectional area at this end?
A) Double
C) $(Half)^2$
B) Half✓
D) $(Double)^2$

The value of least distance vision for normal eye is
A) 20 cm
C) 25 cm✓
B) 30 cm
D) 40 cm

54. The distance between two dark adjacent fringes is mathematically written as:
A) $\Delta Y = \frac{\lambda L}{d}$ ✓
C) $\Delta Y = \frac{\lambda d}{L}$

B) $\Delta Y = \frac{\lambda}{dL}$ D) $\Delta Y = \frac{d}{\lambda L}$

55. In case of capacitor, the unit of reactance is:
A) Ohm✓ B) Mho
C) Farad D) Henry

56. Which type of impurity is to be added to a pure semi-conductor crystal to provide holes:
A) Monovalent B) Trivalent✓
C) Tetravalent D) Pentavalent

57. A diode characteristic curve is plotted between:
A) Current and time B) Voltage and time
C) **Voltage and current✓**
D) Forward voltage and reverse voltage

Transistors are made from:
A) Plastics B) Metals
C) Insulators D) **Doped semi-conductors✓**

59. The momentum of the moving photon is:
A) Zero B) $h\lambda$
C) $\frac{\lambda}{h}$ D) $\frac{h}{\lambda}$✓

60. The amount of energy acquired or lost by an alpha particle as it moves through p.d. of 1 V is:
A) **3.2×10^{-19} J✓** B) 6.4×10^{-19} J
C) 1.6×10^{-19} J D) Zero

The impedance of RLC series circuit at resonance is given by:
A) $Z=\sqrt{R^2+(X_L-X_C)^2}$ B) $Z=\sqrt{R^2+X_L^2}$
C) **Z = R✓** D) $Z=\sqrt{R^2+X_C^2}$

62. Number of electrons emitted in photoelectric effect depends upon:
A) **Intensity of incident light✓** B) Frequency of incident light
C) Energy of incident light D) Wavelength of incident light

63. Which of the following has the least hysteresis loop area:
A) Steel B) Wrought iron
C) **Soft iron✓** D) Cobalt

64. The base in a transistor is of the order of:
A) **10^{-4} m✓** B) 10^{-4} m
C) 10^{-3} m D) 10^{-1} m

65. Grid in cathode ray oscilloscope controls:
A) **Number of electrons✓** B) Temperature of filament
C) Frequ3ency of electrons D) Energy of electrons

The distance between atoms is 0.30 nm. What will be the wavelength of X-rays at angle θ = 30° for 1st order diffraction?

A) λ = 0.60 nm C) λ = 0.20 nm
B) **λ = 0.30 nm✓** D) λ = 0.90 nm

67. **A 100 kg man is standing in an elevator, which accidently falls freely. What will be the weight of the person in the freely falling elevator (take $g=10\ m/s^2$)**
A) 1000 N C) 500 N
B) 10 N D) **Zero✓**

Frequency of simple pendulum of length 9.8 m will be
A) 2 π Hertz C) **1/2π Hertz✓**
B) π/2 Hertz D) π/4 Hertz

69. **A body performs simple harmonic motion with a period of 0.063 s. The maximum speed of 3.0 ms^{-1}. What are the values of the amplitude 'xo (m)' and angular frequency 'ω (rads^{-1})'?**
A) **$x_o = 0.03$, ω = 100✓** C) $x_o = 5.3$, ω = 16
B) $x_o = 0.19$, ω = 16 D) $x_o = 3.3$, ω = 100

70. **Food being cooked in microwave oven is an example of**
A) Beats C) **Resonance✓**
B) Overtones D) Stationary waves

71. **The product of cross-sectional area of the pipe and the fluid speed at any point along the pipe:**
A) **Remains constant✓** C) Exponentially increases
B) Is zero D) Exponentially decreases

A small leak is developed in a large water storage tank. If the height of water above leakage is 10 m, then find the speed of efflux through the leak:
A) **14 m/sec✓** C) 9.8 m/sec
B) 10 m/sec D) 20 m/sec

73. **The minimum distance from the eye at which an object can be seen clearly without strain is called:**
A) Focal point C) Yield point
B) **Near point✓** D) Far point

74. **In the diffraction of light around an obstacle, the angle of diffraction is increased then:**
A) **The wavelength of incident light wave is increased✓**
C) The amplitude of the incident light wave is increased
B) The wavelength of incident light wave is decreased
D) The amplitude of the incident light wave is decreased

An object 15 cm from a lens produces a real image 30 cm from the lens. What is the focal length of the lens?
A) +15 cm C) **+10 cm✓**
B) +20 cm D) +25 cm

76. **Angle between ray of light and wavefront is:**
(A) 0° (B) 60°
(C) **90°✓** (D) 120°

77. **The dimensions of angular velocity are:**
(A) $[LT^{-1}]$ (B) $[LT^{-2}]$

(C) $[L^{-1}T]$ (D) $[T^{-1}]$ ✓

78. In the relation $F = 6\pi\eta rv$. Dimension of coefficient of viscosity η is:
(A) $[ML^{-1}T^{-1}]$ ✓ (B) $[MLT^{-1}]$
(C) $[ML^{-2}T^{-1}]$ (D) $[MLT]$

79. If $\overrightarrow{A} = 2\hat{i} + \hat{j} + 2\hat{k}$ then |A| is:
(A) Zero (B) 3✓
(C) 5 (D) 9

The trajectory of a projectile is:
(A) Circle (B) Parabola✓
(C) Hyperbola (D) Straight line

81. What was the real name of the famous Pakistani actor Santosh Kumar?
(A) Nazir Baig
(B) Syed Mushtaq Rizvi
(C) **Syed Musa Raza✓** (D) Younus Khan

82. Climate Change Conference COP21 was held in Paris. Where was COP20 held?
(A) **Lima✓** (B) Kyoto
(C) Montreal (D) New York

83. Kanpur Mosque Tragedy had taken place in:
(A) 1915 (B) 1909
(C) 1910 (D) **1913✓**

On July 9, 1950, Pakistan became a member of:
(A) Paris Club
(B) IMF
(C) World Bank
(D) **None of the above✓**

85. Which company on 7 April 2020 introduced new policy that limits on message forwarding as part of an effort to curb the spread of misinformation about the corona virus pandemic?
(A) Facebook (B) Instagram
(C) **WhatsApp✓** (D) Twitter

86. India announced new Kashmir Domicile Law on _____.
(A) 1st January 2020
(B) 1st February 2020
(C) 1st March 2020
(D) **1st April 2020✓**

"Sahaif" revealed on Ibrahim (A.S) were?
(A) **3✓** (B) 4
(C) 5

88. Ayub (A.S) was well-known for?
(A) Tolerance (B) **Patience✓**
(C) Love

89. Equatorial climate has:
(A) **No dry season✓** (B) Short dry season
(C) Long dry season (D) None of these

90. Oxygen in the atmosphere is:
(A) 78% (B) **71%✓**
(C) 59% (D) None of these

91. 12.1212 + 17.0005 – 9.1102 =?
(A) 20.15 (B) 20.0105
(C) 20.0015 (D) **-8.3972092✓**

892.7- 573.07 – 95.007 =?
(A) **224.623✓** (B) 224.777
(C) 233.523

93. 0.002 × 0.5 =?
(A) 0.0001 (B) **0.001✓**
(C) 0.01

94. He invited_____ to the feast to celebrate the success of his son.
(A) **All and sundry✓**
(B) Above board
(C) All in all
(D) Alpha and omega

The____ of his speech was that Islam is a religion of peace.
(A) **Alpha and omega✓**
(B) Apple pie order
(C) Are and part
(D) Burning question

96. Seawater is water from a sea or:
(A) Bay (B) River
(C) **Ocean✓** (D) Stream

97. Which of the following gases is used for refrigeration?
(A) Chlorine (B) **Ammonia✓**
(C) Phosphine (D) Carbon Dioxide

The barcode is called:
(A) **Universal Product Code✓**
(B) EBCDIC code
(C) ASCII code
(D) Unicode

98. احمد فراز کا آبائی شہر کون سا تھا؟
(A) پشاور (B) نوشہرہ
(C) میانوالی (D) کوہاٹ✓

100. ______ ضرورت کی ماں ہے۔
(A) کحط (B) ایجاد
(C) فراوانی ✓ (D) قلت

Paper Code
N

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

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Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

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Original *Model* Paper-14

PUBLIC SERVICE COMMISSION

WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **When a helium atom loses an electron, it becomes:**
   A) An alpha particle
   B) Proton.
   C) A positive helium ion.✓
   D) A negative helium ion.
2. **Beta ray emitted by a radioactive substance is:**
   A) An electron which was existing outside the nucleus.
   B) An electron which was existing inside the nucleus.✓
   C) An electron emitted by the nucleus as a result of the decay of neutron inside the nucleus.
   D) A pulse of electromagnetic wave.

☛ **An electric charge in uniform motion produces:**
   A) An electric field.
   B) A magnetic field.
   C) Both magnetic and electric fields.✓
   D) Neither magnetic nor electric fields.

4. **What is emitted by a hot metal filament in a cathode ray tube?**
   A) X-ray.
   B) Proton.
   C) Electron.✓
   D) Photon.
5. **If the mass of the bob of a pendulum is doubled its time period is:**
   A) Halved.
   B) Doubled.
   C) Unchanged.✓
   D) Increases four times.

6. **At high temperature, the proportion of ________ wavelength radiation increase.**
   A) AM radio.
   B) Long radio.
   C) Shorter.
   D) Both A and C.✓
7. **In photoelectric effect removal of photons is observed at ________ energies.**
   A) Low.
   B) High.
   C) Intermediate.
   D) Both A and C.✓

☛ **Which device is the most efficient?**
   A) Nuclear reactor.✓
   B) Storage battery.
   C) Silicon solar cell.
   D) Dry battery cell.

9. **The units of E in $E=mc^2$ are**
   A) $kg\ m\ s^{-2}$.
   B) $N\ m\ s^{-2}$.
   C) $kg\ m^2\ s^{-2}$.✓
   D) Both B and C.
10. **Work done on a body equals change in its ________ energy.**
    A) Total.
    B) Potential.
    C) Kinetic.
    D) All of these.✓
11. **The drag force decreases as the speed of an object moving through fluid ________**
    A) Increases.
    B) Decreases.✓
    C) Remains constant.
    D) Both B and C.

☛ **Light year is a measure of**
   A) Distance.✓
   B) Time.
   C) Intensity of light.
   D) Velocity.

13. **A yellow light of wavelength 500 mm emitted by a single source passes through two narrow slits 1 mm apart. How far apart are two adjacent bright fringes when interference is observed on a screen 10 m away?**
    A) 5 mm.✓
    B) 1.33 mm.
    C) 0.5 mm.
    D) 50 mm.
14. **The heat produced by a current I in the wire of resistance R during time interval t is**
    A) I^2/Rt.
    B) I^2Rt.✓
    C) $I^2/R/t$.
    D) IR^2t.

☛ **Which of the following is the most ductile?**
   A) Glass.
   B) Copper.✓
   C) Cast iron.
   D) High carbon steel.

16. **What is it that we use to calculate the speeds of distant stars and galaxies?**
    A) Doppler Effect✓
    B) Interference
    C) Beats
    D) All of the above
17. **In Young's Double Slit Experiment, if the distance between slits and screen is doubled, then fringe spacing becomes:**
    A) Zero
    B) One
    C) Doubles of the original value✓
    D) Half of the original value
18. **In Michelson's Interferometer 792 bright fringes pass across the field of view when its movable mirror is displaced through 0.233 mm using the equation $I = m\frac{\lambda}{2}$ the wavelength of light used is:**
    A) 588 nm✓
    C) 348 nm

B) 620 nm
D) 400 nm

In Michelson's Experiment, the formula to calculate the speed of light is:
A) $c = 2\,fd$
C) $c = \dfrac{16f}{d}$
B) $c = \dfrac{2\pi f}{d}$
D) $c = 16\,fd$✓

20. The information received at the other end of a fibre can be inaccurate due to ______ of the light signal.
A) Longer wavelengths
C) Intensity
B) Frequency
D) Dispersion or Spreading✓

21. In Millikan's Method, the radius of droplet can be calculated by:
A) $r = \sqrt{\dfrac{qv_t}{2\rho g}}$
C) $r^2 = \dfrac{9\eta v_t}{2\rho g}$✓
B) $r^2 = \dfrac{q\eta v_t}{\rho g}$
D) $r = \dfrac{9\eta v_t}{2\rho g}$

22. The scalar product of i and k is:
A) Zero✓
C) 1
B) 90°
D) –1

If the body is rotating with uniform angular velocity, then its torque is:
A) Zero ✓
C) Maximum
B) Clockwise
D) Remains the same

24. Speed of light, radio waves and microwaves in vacuum is:
A) $3 \times 10^5\ ms^{-1}$
C) $3 \times 10^6\ ms^{-1}$
B) $3 \times 10^3\ ms^{-1}$
D) $3 \times 10^8\ ms^{-1}$✓

25. A body is moving with an initial velocity of 2 kms^{-1}. After a time of 50 secs its velocity becomes 1.5 kms^{-1}. Its acceleration will be:
A) 30 ms^{-1}
C) 20 ms^{-1}
B) 40 ms^{-1}
D) 10 ms^{-1}✓

26. A body of mass 6 g falls under action of gravity. At initial position 'A' its P.E. is 480 J and K.E. is 0 J. During its downward journey at point 'B' its energies will be ($g = 10\ ms^{-2}$):
A) P.E. = 300 J and K.E. = 180 J✓
B) P.E. = 180 J and K.E. = 300 J
C) P.E. = 230 J and K.E. = 250 J
D) P.E. = 250 J and K.E. = 230 J

A tiny droplet of oil of density 'ρ' and radius 'r' falls through air under force of gravity. If viscosity of air is 'η', the terminal velocity acquired by the oil drop is given by:
A) $v_t = \dfrac{4gr^2\rho}{9\eta}$
C) $v_t = \dfrac{2gr^2\rho}{9\eta}$✓
B) $v_t = \dfrac{9\eta r^2\rho}{4g}$
D) $v_t = \dfrac{9\eta r^2\rho}{2g}$

28. Torricelli's theorem be written as:

A) $v_2 = \sqrt{2g(h_1 - h_2)}$✓
C) $v_2 = \sqrt{2g(h_2 - h_1)}$
B) $v_2 = \sqrt{g(h_2 - h_1)}$
D) $v_2 = \sqrt{g(h_1 - h_2)}$

29. When the spaceship rotates with ______ frequency, the artificial gravity like earth is produced to inhabitants of the ship:
A) $2\pi = \sqrt{\dfrac{R}{g}}$
C) $\dfrac{1}{2\pi} = \sqrt{\dfrac{R}{g}}$
B) $2\pi = \sqrt{\dfrac{l}{g}}$
D) $\dfrac{1}{2\pi} = \sqrt{\dfrac{R}{g}}$ ✓

In a microwave oven, the wave produced has a wavelength of 12 cm at a frequency of:
A) 2452 Hz
C) 2455 Hz
B) 2456 Hz
D) 2450 Hz✓

31. In pair production, the type of photon used
A) α-particle
C) X-rays
B) β-particle
D) γ-radiations✓

32. The life time of an electron in an excited state is about 10^{-8} s. What is its uncertainty in energy during this time?
A) 1.05×10^{-41} J
C) 1.15×10^{10} J
B) 1.05×10^{-26} J✓
D) 2.19×10^{-40} J

Velocity of electron moving in first orbit of hydrogen is
A) 2.19×10^7 m/sec
C) 2.2×10^8 m/sec
B) 2.18×10^7 m/sec
D) 2.19×10^6 m/sec✓

34. LASER is a potential energy source for inducing which type of reaction?
A) Radioactive
C) Ionization
B) Fission
D) Fusion✓

35. In the half-life of an element, the equation for the number of decaying atoms is given by
A) $\Delta \propto -N\Delta t$✓
C) $\Delta N \propto -n\Delta t$
B) $\Delta N = KN\Delta t$
D) $\Delta N = -\Delta N\Delta t$

In a simple pendulum, the tension of the string is
A) g cos θ
C) mg cos θ✓
B) mg sin θ
D) mg

37. Two sound waves having the same amplitudes are moving in the same direction are out of phase. The amplitude of the resultant wave is
A) Zero amplitude✓
B) The sum of amplitude of the two waves
C) Difference of the amplitudes of the two waves
D) Double the amplitude of either wave

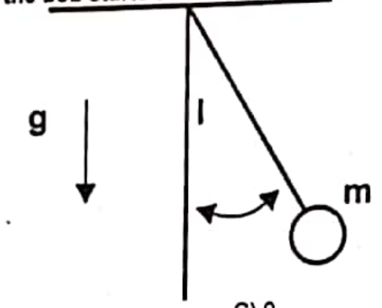
38. A source 'Y' of unknown frequency produces 4 beats with a source of 240 Hz and 8 beats with a sound of 252 Hz. Frequency of the source 'Y' is
A) 244 Hz✓
C) 248 Hz
B) 236 Hz
D) 246 Hz

39. An organ pipe closed at one end has a length of 25 cm. Wavelength of the

fundamental note is
A) 25 cm
B) 50 cm
C) 100 cm✓
D) 75 cm

40. In Newton ring apparatus, at the point of contact of the lens and glass plate, the additional path difference introduced is
A) λ/4
B) λ/2✓
C) λ
D) λ/3

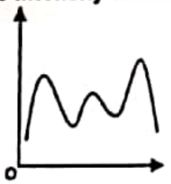
A simple pendulum length 'L' with bob of mass 'm' is slightly displaced from its mean position so that it string makes an angle 'θ' with vertical line as shown in the figure. Then bob of pendulum released. What will be the expression of torque with which the bob starts to move towards the mean position?

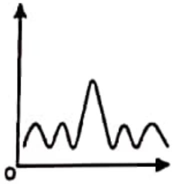


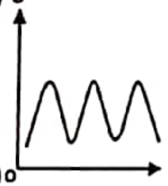
A) mgL
B) mgL sin θ✓
C) 0
D) mgL cos θ

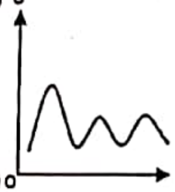
41. The density of blood is:
A) Less than water
B) Nearly equal to water✓
C) Greater than water
D) Three times that of water

42. A monochromatic light of wavelength 'λ' is used to produce the diffraction pattern through a single slit of width X. Which one of the following represents the intensity distribution across the screen?

A) 

B) 

C) 

D) 

43. For interference of light waves to take place, the required condition is
A) The path difference of the light waves from the two sources must be large
B) The interfering waves must be non-coherent
C) The light waves may come from different sources

D) The light waves must come from two coherent sources✓

The property of bending of light around an obstacle and spreading of light waves into geometric shadow of an obstacle is called:
A) Diffraction of Light✓
B) Polarization of Light
C) Quantization of Light
D) Interference of Light

36. Tuning of the radio is the best example of electrical ________
A) Resonance. ✓
B) Resistance.
C) Current.
D) None of these.

37. A standing wave pattern is formed when the length of string is an integral multiple of ________ wavelength.
A) Triple.
B) Full.
C) Half.✓
D) Double.

Which of the following lights travels the fastest in optical fibres?
A) Visible light.
B) Invisible Infra-red.✓
C) Ultra-violet.
D) Ordinary light.

39. The algebraic sum of potential changes in a closed circuit is zero is Kirchhoff's ________ rule.
A) First.
B) Second.✓
C) Third.
D) None of these.

40. In LED when an electron combines with a ________ during forward bias conduction, a photon of visible light is emitted.
A) High voltage.
B) Photon.
C) Hole.✓
D) Positron.

Speed of the waves is equal to:
A) $f\lambda$
B) $\frac{\lambda}{T}$
C) Both A and B✓
D) λT

42. A particle carrying charge of 2e falls through a potential difference of 3.0 V. Calculate the energy required by it:
A) 9.6×10^{-19} J✓
B) 9.1×10^{-19} J
C) 1.6×10^{-19} J
D) 6.0×10^{-19} J

43. The deviation of I-V graph from the straight line is due to:
A) Decrease in temperature and decrease in resistance
B) Increase in temperature and increase in resistance✓
C) Decrease in temperature and increase in resistance
D) Increase in temperature and decrease in resistance

The fractional change in resistance per Kelvin is known as:
A) Temperature coefficient of resistance✓
B) Thermal coefficient
C) Linear coefficient of expansion
D) Volumetric coefficient of expansion

45. The energy supplied by the cell to the charge carriers is derived from the conversion of:
A) Heat energy into Electrical energy
B) Chemical energy into Electrical energy✓
C) Solar energy into Electrical energy

D) Mechanical energy into Electrical energy

46. In transistors, the base region is very thin, of the order of
A) 10^{-5} cm
B) 10^{-4} m✓
C) 10^{-8} mm
D) 10^{-6} μm

The closed loop gain of OP-AMP depends on
A) Internal structure of OP-AMP
B) Externally connected resistances✓
C) Voltage of power supplies
D) Input resistance

48. The net charge on an N-type substance is
A) 0.7 volts✓
B) 0.3 volts
C) 0.25 volts
D) 0.07 volts

49. The value of Wien's constant is
A) 2.90×10^{-3} mK✓
B) 3.34×10^{-4} mK
C) 4.22×10^{-7} mK
D) 3.42×10^{-8} mK

The minimum frequency below which no electron is emitted from the metal surface is called
A) High frequency
B) Low frequency
C) Threshold frequency✓
D) Resonance frequency

51. The equivalent current which passes from a point at higher potential to a point at a lower potential as if it represented a movement of positive charges is
A) Electronic current
B) Electric current
C) Magnetic lines
D) Conventional current✓

52. If 'V' is applied potential difference across a resistance 'R', then loss in potential energy per unit time is
A) VI
B) I^2R
C) $\frac{V^2}{R}$
D) All of the above✓

53. The substances like germanium and silicon have
A) Negative temperature coefficients✓
B) Positive temperature coefficients
C) Both A and B
D) None of the above

54. The sensitivity of a galvanometer can be decreased by
A) Increasing magnetic field
B) Increasing number of turns of the coil
C) Increasing $\frac{c}{BAN}$ Ration✓
D) Decreasing length of couple 'c'

Force on a current carrying conductor in a uniform magnetic field is
A) F = NIA cos α
B) F = μnl
C) F = ILB sin α✓
D) F = ILA cos α

56. A wire is stretched by a force which causes an extension. The energy is stored in it only when:
A) The extension of wire is proportional to force applied✓
B) The cross-section area of the wire remains constant
C) The wire is not stretched beyond its elastic limit
D) The weight of wire is negligible

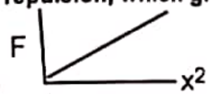
57. Which statement is correct:
A) Elasticity is that property of body which enables body to regain its original dimension
B) Elasticity is that property of a body that does not allow it to return to its original shape
C) Elasticity is that property of a body that allows it to retain its original shape and dimension after the stress✓ is removed.
D) Elasticity is that property of a body that obeys Hooke's law.

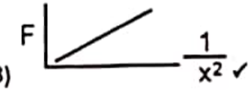
Which of the following is the expression of root mean square speed of a gas having n number of molecules contained in the container?
A) $\sqrt{\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}}$ ✓
B) $\frac{v_1^2 + v_2^2 + ... + v_x^2}{N}$
C) $\sqrt{\frac{v_1 + v_2 + ... + v_x}{N}}$
D) $\frac{v_1 + v_2 + ... + v_x}{N}$

59. For a gas of volume V in its equilibrium state, if the pressure does change with time then total kinetic energy of gas is constant because
A) Collisions between gas molecules occur
B) Collisions between gas molecules occur linearly
C) Collisions must be elastic✓
D) Collisions must be inelastic

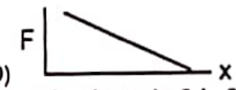
60. Which of the following is the proper way to study the sinusoidal waveform of the voltage?
A) Voltage is connected to X input and the time base is switched off
B) Voltage is connected to Y input and the time base is switched on✓
C) Voltage is connected to Y input and the time base is switched off
D) Voltage is connected to X input and the time base is switched on

61. The value of pressure and volume of fixed mass of gas in thermometer at triple point of water $P_f = 1.00 \times 10^5$ Pa and $V_f = 1 \times 10^{-3}$ m^3. When $P = 1.1 \times 10^5$ Pa and $V = 1.2 \times 10^{-3}$ m^3. Then temperature of gas is:
A) 361K✓
B) 298 K
C) 373K
D) 250K

A point charge at distance 'x' from another point charge experiences a force F of repulsion, which graph shows relationship of force F to 'x':
A) 

B) 

✓
C) 

D) 

63. The Coulumbs force between two point charges q1 = 1c and q2 is 2N. Where distance between them is 3m, the charge q2 is:
A) 1 × 10 – 9 C✓
B) 1×10^9 C
C) 2×10^9 C
D) 4×10^{-9} C

64. Electric field strength at position vector r = (4i + 3j)m caused by point charge q = 5uC placed at origin is:
A) 1440i + 1080j V/m✓
B) 1240i + 1280j N/C
C) 1440i + 1080j N/m
D) 1240i + 1080j N/C

65. 2.00 × 106 e passing through a conductor in 1 millisecond. Electric current

through conductor is:

A) 3.2×10^{-10} A✓
B) 32.0×10^{-9} A
C) 320×10^{-10} A
D) 0.320×10^{-10} A

In Bernoulli's equation the term $\frac{1}{2}\rho v^2$ is called:

A) K.E. per unit volume✓
B) K.E.
C) K.E. per unit area
D) K.E. per unit length

67. Potential energy per unit volume is given by:

A) mgh
B) $\frac{mgh}{\rho}$
C) gh
D) ρgh✓

68. If general equation for destructive interference's is given by the relation,

Optic path difference = $\left(m+\frac{1}{2}\right)\lambda$

where 'm' is an integer, then first dark fringe appears from 'm' will be equal to:

A) $\frac{2}{3}$
B) $\frac{1}{2}$
C) 0✓
D) 1

69. For bright fringe formation, the path difference is:

A) $\left(n+\frac{1}{2}\right)\lambda$ where n = 0, 1, 2, 000
B) nλ where n = 0, 1, 2, ... ✓
C) (2n + 1) $\frac{1}{2}$ where n = 0, 1, 2, ...
D) $\left(\frac{n+1}{2}\right)\lambda^2$ where n = 0, 1, 2, ...

The quantities which can be measured accurately are:

A) Base quantities
B) Physical Quantities✓
C) Derived Quantities
D) Supplementary quantities

71. An observer notes reading of scale from different angle (parallax) while measuring the length of wire, what type of error is possible:

A) Systematic error
B) Zero error
C) Precised error
D) Random error✓

72. The ratio of displacement along diameter of circle and total distance along circle is:

A) 1: π✓
B) π : 1
C) 2 : π
D) π : 2

Arshad is driving down 7th street, he drives 150 m in 18s.. Assume he does not speed up or slow down, what is his speed:

A) 0.38 m/s
B) 126 m/s
C) 8.33 m/s✓
D) A 58.33 m/s

74. The resistance of a piece of wire is 12 Ω. It is bent to form an equilateral triangle. What is the equivalent resistance between any two corners of the triangles?

A) 1.3 Ω
B) 2.0 Ω✓
C) 4.0 Ω
D) 2.7 Ω

75. Magnetic field strength is measure in:

A) Wbm^{-1}
B) Wbm^{-2}✓
C) Wbm^2
D) Wb

76. Force on current carrying conductor per unit length is given by:

A) IL sinθ
B) ILB
C) IL
D) IB sinθ✓

In the case when the electrons lose all their kinetic energy (K.E.) in the first collision, the X-ray photon emitted has which of the following set of frequency and wavelength?

A) fmax, λmin✓
B) fmax, λmax
C) fmin, λmax
D) fmin, λmin

78. If 'A' is fundamental dimension of ampere then the dimension of magnetic field strength is:

A) $[MT^2A^{-2}]$
B) $[MT^{-2}A^{-1}]$✓
C) $[MT^2L^2A^{-1}]$
D) $[MT^2L^{-2}A^{-1}]$

79. What is the 273 k on the Celsius scale of temperature?

A) 0.15 °C
B) 273.15 °C
C) -0.15 °C✓
D) -273.15 °C

If heat 'Q1' is absorbed at temperature 'T' and heat 'Q2' is absorbed at temperature of triple point of water, then unknown temperature of system (in K) is:

A) 273.16
B) $273.16\ Q_2/Q_1$
C) 273.16 Q
D) $273.16\ Q_1/Q_2$✓

81. Which of the following species is endemic to Pakistan?

(A) Indus River Dolphins✓
(B) Snow Leopards
(C) Gypsy Vultures
(D) Houbara Bustard

82. Which animals are most illegally traded in the world?

(A) Elephants (B) Rhinoceros
(C) Pangolins✓ (D) Turtles

83. Decimal System was introduced in Pakistan on First January:

(A) 1963 (B) 1951 (C) 1959 (D) 1961✓

84. On July 9, 1948, Pakistan issued its first: -

(A) Postal Stamp✓ (B) Coin (C) Currency Note
(D) All of the above

85. In Wuhan (China), Lockdown was lifted after how many days ?

(A) 66 days (B) 76 days✓
(C) 80 days (D) 82 days

Prince Harry and Meghan Markle are planning to launch a charitable organisation named Archewell, the name Archewell is inspired from a Greek word meaning_____.

(A) Source of Nation
(B) Source of Light
(C) Source of Action✓
(D) Source of Passion

87. How many Prophets came to Bani-Israil?

(A) 50 thousand (B) 60 thousand
(C) 70 thousand✓

88. Who conquered Egypt?

(A) Amar bin Al-Aas (R.A)✓

(B) Ali (R.A) (C) Usman (R.A)

☞ Density of sea water ranges from:
(A) **1.027 to 1.028✓** (B) 1.010 to 1.025
(C) 1.000 to 1.020 (D) None of these

90. **West-wind drift is a:**
(A) **Circumpolar drift✓** (B) Current of South Pacific Ocean
(C) Current of South Atlantic Ocean (D) None of these

☞ $0.002 \times 0.5 = ?$
(A) 0.0001 (B) **0.001✓** (C) 0.01

92. $16.02 \times 0.001 = ?$
(A) 0.001602 (B) **0.01602✓** (C) 0.1602

93. **She is a good house wife and keeps the house in_____.**
(A) **Apple pie order✓** (B) An augean sable
(C) Left handed complement (D) Lacklustre

94. **The principal's remarks _____. The students flew into fury and decided to go on strike.**
(A) Have one's name on (B) Get the better of him
(C) Bring the person to knee (D) **Add fuel to fire✓**

☞ **Cytology is the:**
(A) **Study of living cells✓** (B) Study of harmones
(C) Study of seeds (D) Study of surface tension

96. **Which among the following is a positively charged particle emitted by a radioactive element?**
(A) Beta rays (B) **Alpha rays✓**
(C) Gamma rays (D) Cathode rays

97. **______ devices is used check and process the test marks of students:**
(A) **OMR✓** (B) Barcode Reader
(C) An example of smart card (D) MICR

☞ **______ is an audio input device.**
(A) Digital camera (B) **Microphone✓**
(C) Video camera (D) Speaker

99. مندرجہ ذیل میں سے کس شاعری کی نسبت شہر اقبال سیالکوٹ سے ہے؟
(A) حفیظ جالندھری✓ (B) احسان دانش (C) فیض احمد فیض (D) منیر نیازی

100. حروف تہجی کے اعتبار سے کون سا لفظ لغت میں پہلے آئے گا؟
(A) سنگدل✓ (B) لاپرواہ
(C) ضمانت (D) ظالم

Paper Code
O

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. **Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?**
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☞ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Original *Model* Paper-15

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Molten KCl conduct electricity due to presence of:**
(A) **Free ions✓**
(B) Free electrons
(C) Free molecules
(D) Atoms of potassium and chloride

2. **Which quantities are required to calculate the enthalpy change of formation of gaseous sodium ions?**
(A) **Enthalpy changes of atomization of sodium✓**
(B) First ionization energy of sodium
(C) Enthalpy change of formation of sodium
(D) None of these

☞ **The temperature of system decreases in an:**
(A) Adiabatic expansion
(B) Isothermal expansion
(C) **Adiabatic compression✓**
(D) Isothermal compression

4. **The system in which there is no exchange of heat between system and surrounding is called:**
(A) Isobaric process

(B) Isochoric process
(C) Adiabatic process
(D) Isothermal process

5. **An Isothermal process is one in which:**
(A) $\Delta E = 0$
(B) $\Delta T = 0$✓
(C) $\Delta V = 0$
(D) $\Delta AE = W$

Process of evaporation of liquid is accompanied by:
(A) Increase in enthalpy
(B) Decrease in enthalpy
(C) No change in free entropy✓
(D) No change in free energy

7. **Entropy decrease in:**
(A) Melting of ice
(B) Rusting of iron
(C) Vaporization of camphor
(D) Crystallization of sucrose from solution✓

8. **Entropy of universe is always:**
(A) Increasing✓ (B) Decreasing
(C) Zero (D) Constant

9. **According to Bronsted-Lowry concept, a base is a substance which act as:**
(A) A proton donor
(B) An electron donor
(C) An proton acceptor✓
(D) An electron acceptor

According to Lewis concept base is a substance which:
(A) Accepts proton
(B) Donates proton
(C) Accepts a lone pair of electron✓
(D) Donates a lone pair of electron

11. **The weakest Lewis base is:**
(A) H□✓ (B) OH-
(C) CI (D) HCO^3

12. **Which one of the following least resembles and ideal gas?**
(A) Ammonia
(B) Helium
(C) Hydrogen
(D) Tricholoromethane✓

13. **Compound X does not conduct electricity when in a liquid state, when added to water produces a solution that readily conducts electricity. What could X be?**
(A) $MgCl_2$✓ (B) $SiCl_4$
(C) PCl_4 (D) None of these

The random motion of colloidal particle in the dispersion medium is referred to as:
(A) Adsorption
(B) Coagulation

(C) Brownian movement✓
(D) Tyndall effect

15. **A compound that does not give a positive test is Lassaigne's test for N is:**
(A) Azobenzene✓ (B) Glycine
(C) Urea
(D) Phenyl hydrazine

16. **A gas decolorizes alkaline $KMnO_4$ solution but does not precipitate with amonical $AgNOS_3$ solution, it is:**
(A) Ethylene✓
(B) Ethane
(C) Methane
(D) Acetylene

Chlorine reacts with hot concentrated aqueous sodium hydroxide according to the question below:

$3Cl_2 + 6NaOH_{(aq)} \rightarrow NaClO_{3(aq)} + 5NaCl_{(aq)} + 3H_2O_{(l)}$

Which conclusion can be drawn from the information?
(A) The oxidation state of the chlorine in one of the products is +5.✓
(B) The Chlorine undergoes disproportionate.
(C) The sodium hydroxide acts as a reducing agent
(D) None of these

18. **For a compound to be purified by steam distillation:**
(A) Impurities must be nonvolatile✓
(B) Liquid must be immiscible with water
(C) Molecular weight of the compound is excepted to be high
(D) All are correct

Modern cars are fitted with catalytic converters. These remove carbon monoxide, unborn hydrocarbons and oxides of nitrogen from exhaust gases. Which of these pollutant gases are removed by oxidation?
(A) Carbon monoxide✓
(B) Hydrocarbons
(C) Nitrogen oxides
(D) None of these

20. **Oxidizing action increases in the following order.**
(A) CI<BR<I<F
(B) CI<I<BR<I<F
(C) I<Br<CI<I<F✓
(D) I<F<CI<I<Br

21. **Point out the false statement. Strong oxidizing character is favored by:**
(A) Low ionization energy of the halogen atom✓
(B) High electron affinity of the halogen atom
(C) High hydration energy of the gaseous halide ion
(D) Low heat of dissociation of the molecular halogen

22. **The EAN of Ni in $Ni(CO)_4$ is:**
(A) 38 **(B) 56✓**
(C) 18 (D) 54

Complex with multidentate ligands are called:
(A) Chelates✓
(B) Coordination complexes

(C) Covalent complexes
(D) None of these

24. Molecular compounds in which the individual components lose their identity are called:
(A) **Complex compounds✓**
(B) Lattice compounds
(C) Simple salts
(D) All of these

25. The Benzene molecule contains:
(A) **Six sp^2 hybrid carbons✓**
(B) Six sp^3 hybrid carbons
(C) Three sp^2 hybrid carbons
(D) Three sp^3 hybrid carbons

26. In Benzene there are:
(A) 3 π electrons
(B) 4 π electrons
(C) 8 π electrons
(D) **6 π electrons✓**

27. Which of the following acid can be used as catalyst in Friedel-Craft reaction?
(A) **$AlCl_3$✓** (B) HNO_3
(C) $BECl_2$ (D) $ZNCl_2$

28. Six carbon atoms of Benzene are proposed by:
(A) **One type✓** (B) Two types
(C) Three types (D) Six types

The cyclic formula for Benzene was proposed by:
(A) **Kekule✓** (B) Dewar
(C) Armstrong and Baeyer
(D) Landerberg

30. Alkyl groups are o-, p-directing because of:
(A) Inductive effect
(B) Resonance effect
(C) **Resonance effect through hyper conjugation✓**
(D) All of these

31. The Cl atom attached to Benzene ring is:
(A) o-directing
(B) m-directing
(C) o and p-directing and activating
(D) **o and p-directing and deactivating✓**

32. Benzene is converted to Toluene by:
(A) Grignard reaction
(B) Perkin reaction
(C) **Friedel Crafts reaction✓**
(D) Wurtz reaction

Which of the following is least soluble in water?
(A) Ethanol
(B) Phenol
(C) Benzoic acid

(D) **Benzene✓**

34. Which of the following is not explosive?
(A) Trinitrobenzene
(B) Trinitrotoluene
(C) Nitro glycerine
(D) **O-Amino Toluene✓**

35. The oxide and chloride of an element X are separately mixed with water. The two resulting solutions have the same effect on litmus. What is element X?
(A) Sodium
(B) Magnesium
(C) Aluminum
(D) **Phosphorus✓**

Which alcohol may be oxidized to a product which reacts with 2,4-dinitrophenylhydrazine reagent but not with Fehling's reagent?
(A) Butan-1-01
(B) Butan-2-01
(C) 2-methylporpan-2-01
(D) 2-methlyproparin-2-0✓

37. Which compound is a product of the hydrolysis of $CH_3CO_2C_3H_7$ by boiling aqueous sodium hydroxide?
(A) CH_3OH (B) **C_3H_7OH✓**
(C) $C_3H_7CO_2H$
(D) $C_3H_7CO^{-2}Na^{+}$

38. Phenolphthalein is colourless in acidic medium because it has:
(A) Bepzenoid structure
(B) Quinoid structure
(C) Dissociated structure
(D) **Undissociated structure✓**

39. Fluorescein, tatrazine, rhodamine and chromotrope are examples of:
(A) Acid base indicators
(B) **Adsorption indicators✓**
(C) Mixed indicators
(D) Extractive indicators

The indicator that should not be added in the volumetric flask in which the titration is carried out:
(A) **Self indicator✓**
(B) Internal indicator
(C) External indicator
(D) Mixed indicator

41. In the manufacture of Sulphuric acid plantinised asbestos is used as a catalyst, it is an example of:
(A) Promoter
(B) Autocatalysis
(C) **Heterogeneous catalysis✓**
(D) Homogeneous catalysis

Theory of heterogeneous catalysis is based upon phenomenon of:
(A) Absorption
(B) **Adsorption✓**

(C) Sorption
(D) Dissociation

43. The first attempt to classify elements was made by:
(A) Dobereiner✓ (B) Newland
(C) Mendleef
(D) Lother Meyer

44. Elements of same vertical group of the Periodic Table have:
(A) Same atomic size
(B) Same electronic configuration
(C) Same number of atoms
(D) Same number of electrons in the outer most shell of their atoms✓

☞ Elements of group 1B are called:
(A) Coinage metals✓
(B) Rare earth metals
(C) Transition element
(D) Normal Elements

46. Which one of the following phenomenon will occur when two atoms of the elements having same spin of electrons approach for bonding?
(A) Orbital overlap will not occur
(B) Bonding will not occur
(C) Both A & B✓
(D) None of these

47. Molecular orbitals are filled with electrons according to:
(A) Aufbau principle
(B) Hund's rule✓
(C) Pauli exclusion principle
(D) All of these

48. Resonating forms of a molecule can:
(A) Be separated
(B) Never be separated✓
(C) Either A or B
(D) None

49. The oxidation number of P in KH_2PO_4 is:
(A) +1 (B) +3
(C) -3 (D) +5✓

☞ A mixture in heating with concentrated H_2SO_4 and MnO_2 liberates brown vapors of:
(A) NO_2 (B) Br_2✓
(C) Cl_2 (D) 12

51. Enzyme are:
(A) Fatty acids (B) Vitamins
(C) Proteins✓
(D) None of these

52. Enzymes belong to which class of compounds?
(A) Polysaccharides
(B) Polypeptides✓
(C) Polynitro heterocyclic compounds
(D) Hydrocarbons

☞ The Helical Structure of protein is stabilized by:
(A) Peptide bonds
(B) Dipeptide bonds
(C) Hydrogen bonds✓
(D) Van der Waals forces

54. The function of enzymes in the living system is to:
(A) Transport oxygen
(B) Provide immunity
(C) Catalyze biochemical reactions✓
(D) Provide energy

55. Which one of the following vitamins checks nights blindness?
(A) A✓ (B) B (C) C (D) D

☞ Which of the following is an example of Zwitter ion?
(A) Alanine
(B) Glycine hydrochloride✓
(C) Both A and B
(D) None

57. What does IR spectroscopy allow us to determine?
(A) The number of carbon in a compound
(B) The Kinds of bonds in a compound
(C) the molecular formula of a compound
(D) The carbon-hydrogen framework of a corn pound✓

58. March gas contains:
(A) CO (B) H_2S
(C) CH_4✓ (D) C_2H_2

59. Which of the following solvents is the best to use when taking IR spectrum?
(A) CCl_4✓ (B) Methanol
(C) Water (D) Ethanol

☞ A Strong peak between 1700 and 1760 cm^{-1}. In an infrared spectrum most likely indicates:
(A) The presence of an alkene
(B) The presence of a saturated compound
(C) The presence of an alkyne
(D) The presence of a carbonyl compound✓

61. What types of radiation is used in Nuclear Magnetic Resonance Spectroscopy?
(A) Visible light (B) Ultraviolet light
(C) Radio waves✓ (D) Micro waves

62 Experimental evidence for the existence atomic nucleus comes from:
(A) Millikan's oil drop method
(B) Atomic absorption spectroscopy
(C) The magnetic bending of cathode rays
(D) Alpha scattering by a thin metal foil✓

☞ Which of the following is false in case of an electron?
(A) It is a particle
(B) It has a wave property
(C) It emits energy while moving in orbits✓
(D) Its motion is affected by magnetic field

64. Which of the following is whole number?

(A) Atomic weight (B) **Atomic number✓**
(C) Atomic radii (D) Equivalent weight

65. **Electronic configuration of M^{2+} ion is 2,8,14 and its atomic weight is 56 amu. The number of the Neutron in the nucleus are:**
(A) 30 (B) **32✓** (C) 34 (D) 42

66. **The ratio between the neutrons present in C and Si with respect to atomic masses 12 and 28 is:**
(A) **3:7✓** (B) 7:3 (C) 3:4 (D) 6:28

The Energy required to separate the nucleons from a nucleotide is catcalled:
(A) Nucleus energy (B) Ionization energy
(C) **Binding energy✓** (D) None

68. **The stability of the nucleus mainly depend on the number o:**
(A) **Proton and neutrons✓** (B) Neutrons and electrons
(C) Protons and electrons (D) All of these

69. **The difference between the total mass of the particle present and the real mass of an atom is called:**
(A) Mass
(B) Energy
(C) **Mass defect✓**
(D) Binding energy

A certain mass of gas occupies a volume of 2L at S.T.P keeping the pressure constant at what temperature would the gas occupy a volume of 4L?
(A) 273°C (B) **546°C✓**
(C) 50°C (D) 100°C

71. **The difference between crystalloid and colloid is of:**
(A) Solubility (B) Diffusion
(C) **Particle size✓**
(D) Chemical Composition

72. **A liquid is found to scatter a beam of light but leaves no residue when passed through filter paper. The liquid can be describe as:**
(A) **True solution✓**
(B) Colloidal solution
(C) Suspension
(D) Oil

73. **At equilibrium which of the following reaction is not affected by pressure:**
(A) **$\frac{1}{2} N_{2(g)} + \frac{1}{2} O_2 \leftrightarrow NO$✓**
(B) $PCl_{5(g)} \leftrightarrow PCl_{3(g)} + Cl_{2(g)}$
(C) $SO_2Cl_{2(g)} \leftrightarrow SO_{2(g)} + Cl_{2(g)}$
(D) $SO_2Cl_{2(g)} \leftrightarrow SO_{2(g)} + Cl_{2(g)}$

In the Lime kiln, the reversible reaction $CaCO_3 \leftrightarrow CaO + CO_2$ proceeds to completion because:
(A) **CO_2 escapes✓**
(B) CaO is removed
(C) OF low temperature
(D) OF high pressure

75. **In which of the following cases does the reaction go farthest to completion.**
(A) $K = 10^2$ (B) $K = 1$

(C) $K = 10$ (D) **$K = 100^{-2}$✓**

76. **The unit of equilibrium constant Kc from the reaction $N_2 + 3H_2 \leftrightarrow 2NH_3 + Q$ cal will be:**
(A) Liter^2 mole^{-2} (B) Mole^2 litre^{-2}
(C) Mole Liter^{-1} (D) **No Unit✓**

77. **The term active mass of a substance is used to denote the number of:**
(A) Grams per liter
(B) Molecules per liter
(C) Gram atoms per liter
(D) **Gram molecules per liter✓**

78. **For a reversible reaction to reach an equilibrium state the reaction is said to be carried outs:**
(A) Glass vessel
(B) Iron vessel
(C) Open vessel
(D) **Dosed vessel✓**

79. **According to Le Chiseller's Principle, adding heat to a solid and liquid in equilibrium will cause the:**
(A) **An amount of solid to decrease✓**
(B) Amount of liquid to decrease
(C) Temperature of rise
(D) Temperature to fall

Preparation of Ice cream is based on the principle of:
(A) Exchange of solvent
(B) Peptization
(C) Coagulation
(D) **Excess in✓**

81. **Reshma was a legendary folk singer of Pakistan. She died of cancer in Lahore in:**
(A) **Nov. 2013✓** (B) Nov. 2012
(C) Jan. 2009 (D) Dec. 2014

82. **Famous TV drama "Waris" was written by?**
(A) Atta-ul-Haq Qasmi
(B) Dr. Anwar Sajjad
(C) **Amjad Islam Amjad✓**
(D) Younis Butt

83. **The first Princely State to accede to Pakistan after partition was: -**
(A) Kalat (B) Swat
(C) Hunza (D) **Bahawalpur✓**

84. **The designation of Governor-General was changed to President in:**
(A) 1959 (B) **1956✓**
(C) 1957 (D) 1958

In 2022, which city will become the first-ever city that has held both the summer and the winter Olympic Games.
(A) Tokyo (B) **Beijing✓**
(C) Pyeongchang (D) Paris

86. The 2020 Davis Cup will be the_____edition of the Davis Cup, a tournament between national teams in men's tennis.
(A) 106th (B) 109th✓ (C) 100th (D) 103rd

87. Banu Ghassan is in?
(A) Iraq✓ (B) Syria (C) Egypt

88. Battle of Yamama was fought against?
(A) Romans (B) Egyptians (C) Musailma Kazzab✓

Limestone is a:
(A) Meta-morphic rock (B) Sedime-ntary rock✓
(C) Igneous rock (D) None of these

90. The material thrown out during an eruption is:
(A) Solid (B) Liquid✓
(C) Gaseous (D) None of these

91. $\left[.00625 \text{ of } \frac{23}{5}\right]$ when expressed as a fraction, equals:
(A) $\frac{23}{80}$ (B) $\frac{23}{800}$ ✓ (C) $\frac{23}{8000}$

92. 0.213 + 0.00213 =?
(A) 1 (B) 10 (C) 100✓

93. By next July, I ____ in this office for ten years.
(A) Will work (B) Worked (C) Shall be worked
(D) Shall have been working✓

She ____ of marrying Ali when she discovered Ahmed was already married.
(A) Had thought (B) Was thinking✓
(C) Was being thought (D) Though

95. If there is no sun, the color of the sky would be:
(A) Orange (B) Blue (C) Yellow (D) None of these✓

96. Which of the following is not a chemical reaction?
(A) Burning of a paper (B) Conversion of water into steam✓
(C) Digestion of food (D) Burning of coal

97. _______ is an output device.
(A) Monitor (B) Speaker (C) Printer (D) All✓

Printers and monitors are examples of:
(A) Input unit (B) Storage unit (C) Output unit✓
(D) Processing unit

99. درج ذیل میں ضرب المثل کون سی ہے؟
(A) گھوڑے بیچ کر سونا (B) الٹا چور کوتوال کو ڈانٹے✓
(C) ہوائی قلعے تعمیر کرنا (D) ہتھیلی پر سرسوں جمانا

100. اردو ادب کی مشہور شخصیت قرۃ العین حیدر کی وجہ شہرت کیا ہے؟
(A) سفر نگاری (B) ناول نگاری✓
(C) مزاح نگاری (D) شاعری

SELF ASSESSMENT PAPERS
WITH EXPLANATORY ANSWERS
FOR THE POST OF
LECTURER PHYSICS

Paper Code
A

PUBLIC SERVICE COMMISSION

ROLL NO.

Time Allowed: Two Hours Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Self Assessment Paper-1

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Percentage of proteins in plasma:**
   A) 6-7% **B) 7-8%✓**
   C) 8-9% D) 9-10%
2. **Haemoglobin is a pigment:**
   A) Respiratory✓ B) Excretory
   C) Pulmonary D) Reproductive
3. **Normal blood pressure:**
   A) 80/90 mm Hg B) 70/80 mm Hg
   C) 80/110 mm Hg **D) 80/120 mm Hg✓**
4. **The blood in the arteries is:**
   A) Pulsing✓ B) Degenerating
   C) Both a & b D) None of these
5. **The substances present on the surface of erythrocytes:**
   A) Antibodies **B) Antigens✓**
   C) Hormones D) Glands
6. **Haemophilia is:**

   A) Contagious B) Water born
   C) Air born **D) Hereditary✓**
7. **Deficiency of red blood cells in the body:**
   A) Anaemia✓ B) Heart attack
   C) Haemophilia D) brain stroke
8. **Whole blood minus blood cells:**
   A) Lymph **B) Plasma✓**
   C) Tissue fluid D) Serum
9. **Plasma minus fibrinogen:**
   A) Lymph **B) Serum✓**
   C) Tissue fluid D) None of these
10. **The average number of leucocytes in human beings:**
    A) 7000 to 9000/mm^3 B) 5000 to 9000/mm^3
    C) 10,000 to 12000/mm^3 **D) 5000 to 7000/mm^3✓**
11. **Genetically engineered cells are introduced into bone marrow cells in the treatment of**
    A) Hypercholesterolemia
    B) Severe Combined Immunodeficiency Syndrome✓
    C) Cystic Fibrosis
    D) Coronary Artery Angioplasty (SCID)
12. **Which one of the following is depleting and causing thinning of ozone?**
    A) Chlorine **C) Chlorofluorocarbon✓**
    B) Bromine D) Carbon
13. **The typical environment of a particular organism population community is called**
    A) Niche **C) Habitat✓**
    B) Ecosystem D) Biosphere
14. **Excessive enrichment of water with nutrients by human activity by which large amount of living organic matter grows is called**
    A) Archeotrophication C) Enrichment
    B) Eutrophication✓ D) Low Trophication
15. **In an ecosystem, mycorrhizae is an example of**
    A) Symbiosis✓ C) Commensalism
    B) Predation D) Parasitism
16. **Which of the following enzyme is released in an inactive form**
    A) Amylase C) Enterokinase
    B) Lipase **D) Pepsin✓**
17. **Which of the following hormones stimulate the secretion of pancreatic juice from pancreas in liver?**
    A) Secretin✓ C) Gastrin
    B) Pepsinogen D) Both Gastrin and Secretin
18. **.In large intestine, vitamin k is formed by the activity of**
    A) Symbiotic Bacteria✓ C) Parasitic Bacteria
    B) Obligate Bacteria D) Facultative Bacteria

19. **During swallowing of food which structure close nasal opening?**
A) Hard Palate
B) Soft Palate✓
C) Epiglottis
D) Larynx

20. **The right atrium of the heart usually receives the**
A) Deoxygenated Blood✓
B) Oxygenated Blood
C) Filtered Blood
D) Non-Filtered Blood

21. **Newly produced cells/individuals which are identical in each other are known as**
A) Genetically Modified✓
B) Transgenic Animals
C) Transgenic Bacteria
D) Clones

22. **Which of the following is a blood borne disease?**
A) Hepatitis✓
B) Cholera
C) Influenza
D) Candidiasis

23. **The control of pest has traditionally meant regulation by natural enemies, predators, parasites and pathogens. This type of control is known as**
A) Cultural Control
B) Biological Control✓
C) Pesticides Control
D) Insecticides Control

24. **Which of the following organelles is concerned with the cell secretion**
A) Ribosomes
B) Golgi Apparatus✓
C) Lysosomes
D) Mitochondria

25. **Which of the following contains peptidoglycan cell wall?**
A) Penicillium
B) Bacterium✓
C) Adiantum
D) Polytrichum

26. **In passive immunity which of the following component are injected into blood**
A) Antigens
B) Immunogens
C) Serum
D) Immunoglobulins✓

27. **Mucous membranes are part of body defense system and they offer**
A) Physical Barriers✓
B) Mechanical Barriers
C) Chemical Barriers
D) Biological Barriers

28. **Immediate protection is obtained from**
A) Passive Immunity✓
B) Active Immunity
C) Vaccination
D) Natural Activity Immunity

29. **The immunity in which T-cells recognize the antigens or micro-organisms is known as**
A) Tissue Grafting
B) Cell Mediated Immunity / Response✓
C) Phagocytosis
D) Hormonal Immunity / Response

30. **Oxidative phosphorylation, synthesis of ATP in the presence of oxygen occurs in:**
A) All Types of Cells
B) All Anaerobic Cells
C) All Primitive Cells✓
D) All Aerobic Cells

31. **β-cells of liver secrete a hormone that is called**
A) Insulin
B) Glucagon
C) Antidiuretic hormone
D) Gastrin

32. **Vasopressin and Oxytocin are released from the**

A) Placenta
B) Ovary
C) Anterior pituitary
D) Posterior pituitary✓

33. **Antigen is a foreign protein or any other molecule which stimulates the formation of**
A) MHC complex
B) Immunogen
C) Mucus
D) Antibodies✓

34. **Antibodies are produced by which of the following lymphocytes?**
A) B lymphocytes✓
B) A lymphocytes
C) T lymphocytes
D) B and T lymphocytes

35. **T-lymphocytes become mature and competent under the influence of**
A) Liver
B) Bursa of fabricius
C) Thymus gland✓
D) Spleen

36. **When the presence of a gene at one locus suppresses the effect of a gene at another locus, the phenomenon is called**
A) Hypostasis
B) Pleiotropy
C) Epistasis
D) Epitropy

37. **The gene for ABO-blood group systems in humans is represented by symbol:**
A) X
B) I
C) Y✓
D) O

38. **When a single gene affects two or more traits, the phenomenon is called**
A) Epistasis
B) Pleiotropy✓
C) Dominance
D) Over dominance

39. **The comparative embryology of all vertebrates shows development of**
A) Hairs
B) Gill pouches✓
C) Scales
D) Fins

40. **In men, sex-determination depends upon the nature of**
A) Heterogametic male✓
B) Homogametic female
C) Heterogametic female
D) Homogametic male

41. **Carbohydrates are organic molecules and contain three elements**
A) Carbon, water and oxygen
B) Carbon, Sulphur and hydrogen
C) Carbon, calcium and hydrogen
D) Carbon, hydrogen and oxygen✓

42. **Which one are intermediates in respiration and photosynthesis both?**
A) Ribose and heptolose
B) Glyceraldehydes and dihydroxyacetone✓
C) Glucose and galactose
D) Fructose and ribulose

43. **Which of the following is a peptide bond?**
A) –C–N✓
B) –C–O
C) –C–P
D) –C–S

44. **Which of the following is an unsaturated fatty acid?**
A) Acetic Acid
B) Butyric acid
C) Oleic acid✓
D) Palmitic acid

45. **Which of the following combination of base pair is absent in DNA?**
A) A–T
C) A–U✓

B) C–G
D) T–A

46. The type of inhibition in which inhibitor has no structural similarity to substrate and16.Which of the following is a keto sugar:
A) Glyceraldehyde
B) Dihydroxy-acetone✓
C) Ribose
D) Glucose

47. Amino acid in which the R-group is hydrogen is:
A) Glycine✓
B) Alanine
C) Leucine
D) Valine

48. Acyl-glycerols like fats and oils are esters formed by condensation reaction between:
A) Fatty acids and water
B) Fatty acids and alcohols✓
C) Fatty acids and glucose
D) Fatty acids and phosphates

49. Which of the following is purine:
A) Guanine✓
B) Cytosine
C) Thymine
D) Uracil

50. If the co-factor is covalently or tightly and permanently bonded to enzyme then it will be called:
A) Coenzyme
B) Prosthetic group✓
C) Activator
D) Apoenzyme

51. The structures which respond when they are stimulated by impulse coming through motor neuron are:
A) Receptors
B) Responders
C) Transducers
D) Effectors✓

52. Thalamus and cerebrum are the part of:
A) Fore brain✓
B) Mid brain
C) Hind brain
D) Spinal cord

53. There is also EVIDENCE that high levels of ______ may contribute to the onset of Alzheimer's disease:
A) Mg
B) Mo
C) Al✓
D) Ca

54. L-dopa or Levodopa is used to get some relief from??
A) Epilepsy
B) Alzheimer's disease
C) Parkinson's disease✓
D) Dementia

55. Spermatogonia differentiate directly into?
A) Primary spermatocytes✓
B) Secondary spermatocytes
C) Spermatozoa
D) Spermatids

56. The end product of anaerobic respiration in humans and other mammals is:
A) Pyruvic acid
B) Ethanol
C) Lactic acid✓
D) Glucose

57. A biochemical process which occurs within a cell to breakdown complex compounds to produce energy is called:
A) Respiration
B) Photosynthesis
C) Oxidation reduction✓
D) Photophosphorylation

58. Which part of chlorophyll molecule absorbs light?

A) Phytol
B) Porphyrin ring0✓
C) Pyrrole
D) Thylakoid membrane

59. The DNA molecule formed from messenger-RNA by reverse transcriptase is called??
A) Complementary DNA✓
B) Recombinant DNA
C) Chimeric DNA
D) Plasmid DNA

60. The agent which separates the two strands of DNA in PCR is??
A) DNA ligase
B) Primer
C) Heat✓
D) Helicase

61. What are the sequence of steps in which a bacteriophage attacks bacteria and injects its DNA?
A) Landing ∀ Tail contraction ∀ Penetration ∀ DNA injection✓
B) Penetration ∀ Landing ∀ Tail contraction ∀ DNA injection
C) Tail contraction ∀ Landing ∀ DNA injection ∀ Penetration
D) Landing ∀ Penetration ∀ Tail contraction ∀ DNA injection

62. Athlete's Foot is a disease caused by
A) Bacteria
B) Virus
C) Fungus✓
D) Arthropod

63. Ascaris is which one of the following?
A) Ectoparasite
B) Intestinal parasite✓
C) Respiratory tract parasite
D) Urinogenital tract parasite

64. Polymorphism is a feature exhibited by members of
A) Coelenterates
B) Arthropoda✓
C) Porifera
D) Platyhelminthes

65. Which one of the following is the primary host of liver fluke?
A) Man
B) Sheep✓
C) Snail
D) Dog

66. Which one of the following structures holds the bones together?
A) Joints
B) Cartilages
C) Fibrous capsules
D) Ligaments✓

67. Which one of the following cartilages is the most abundant in the human body?
A) Elastic cartilage
B) Chondrous cartilage
C) Fibrous Cartilage
D) Hyaline Cartilage✓

68. The repeated protein pattern of myofibrils is called
A) Sarcomere✓
B) Zyomere
C) Sarcolemma
D) Cross bridges

69. When more energy is required in muscle contraction then that energy can also be produced by ______________ as a secondary source.
A) Glucose
B) Phosphocreatine✓
C) Fructose
D) Lactic acid

70. Which one of the following is a steroid hormone?
A) Glucagon
B) Thyroxine
C) Epinephrine
D) Oestrogen✓

71. Right atrium is separated from right ventricle by:
A) Bicuspid Valve
B) Semilunar Valve
C) Tricuspid Valve✓
D) Interatrial Septum

72. The flaps of tricuspid valves are attached to muscular extensions of right ventricle known as:
A) Smooth Muscles
B) Papillary Muscles✓
C) Intercostal Muscles
D) Skeletal Muscles

73. One complete heart beat consists of one systole and one diastole and lasts for about:
A) 0.8 sec✓
B) 0.2 sec
C) 0.4 sec
D) 0.5 sec

74. The heart beat cycle starts when electric impulses are generated from;
A) AV Node
B) SV Node
C) SA Node✓
D) PQ Node

75. About 70-85% CO_2 in blood is carried:
A) As carboxylase myoglobin
B) With proteins in plasma
C) Freely as CO_2
D) As bicarbonate✓

76. In human testis, which structure is responsible for carrying sperm from inside the testis?
A) Seminiferous tubules
B) Urinogenital duct
C) Seminal Vesicles
D) Vasa efferentia✓

77. In which part of female reproductive system fertilization takes place?
A) Proximal part of oviduct✓
B) Uterus
C) Placenta
D) Vagina

78. In females, FSH stimulates the ovary to produce:
A) Progesterone
B) Lactin
C) Oestrogen✓
D) Oxytocin

79. Syphilis, sexually transmitted disease is caused by:
A) HIV
B) Treponema pallidum✓
C) Neisseria gonorhoeae
D) Type '2' virus

80. In which phase of human female menstrual cycle, endometrium prepares for the implantation of embryo?
A) Proliferative phase
B) Menstrual phase
C) Secretory phase✓
D) Ovulation phase

81. What was the rank of former Foreign Minister, Gohar Ayub Khan, when he left the Army?
(A) Captain✓ (B) Major (C) Colonel (D) Brigadier

82. Who was the American Ambassador who died along with President Zia-ul-Haq in plane crash in 1988?
(A) Tom Simon (B) Robert M Samuel
(C) Arnold Backer (D) Arnold Lewis Raphel

83. Name the Chief Minister of Sindh from August 1947 to April 1948.
(A) Noor Talpur (B) Nisar Khoro
(C) Ayub Khoro✓ (D) Rahim Talpur

84. Who was the first Chief Minister of Khyber Pakhtunkhwa?
(A)Dr. Ali Khan (B) Khan Abdul Qayyaum Khan
(C)Dr. Khan Sahib✓ (D) Abdur Rehman Hoti

85. From which country the first case of a Tiger tested positive of COVID-19 has been reported?
(A) UK (B) USA✓ (C) UAE (D) India

86. The 3rd Asian Youth Games 2021 will be held in ____
(A) Singapore (B) China✓ (C) Taiwan (D) Hong Kong

87. Who penned down peace treaty on the conquest of Jerusalem?
(A) Omar (R.A)✓ (B) Ali (R.A) (C) Khalid Bin Walid (R.A)

88. Koofa was built on the orders of?
(A) Usman (R.A) (B) Ali (R.A) (C) Omar (R.A)✓

89. The cold air mass is:
(A) Conditionally unstable✓ (B) Stable
(C) Unstable (D) None of these

90. Weathering is caused by:
(A) Great range of temperature✓ (B) Great range of rainfall
(C) Action of wind (D) None of these

91. 4.036 divided by 0.04 gives:
(A) 1.009 (B) 10.09 (C) 100.0 (D) 100.9✓

92. If 10 men can complete a work in 20 days, how long will it take 8 men to do the job if they work at the same rate?
(A) 14 days (B) 18 days (C) 25 days✓

93. I don't like milk, so I ____ tea for breakfast.
(A) Generally drink✓ (B) Am generally drinking
(C) Was generally drinking (D) Had generally drunk

94. Where ____ next Sunday? Perhaps I may be visiting you.
(A) Do you spend✓ (B) Did you spend
(C) Will you have spent (D) You spend

95. A chronometer measures:
(A) Sound waves (B) Time✓ (C) Color contrast (D) Water waves

96. The lightest particle of the matter is:
(A) Electron✓ (B) Neutron (C) Proton (D) Deuteron

97. ________ is not to related softcopy output.
(A) CRT (B) Plotter, printer✓
(C) Monitor (D) Screen

98. ________ works like a photocopying machine.
(A) Inkjet printer (B) Bubble printer
(C) Laser printer (D) Band printer

99. مشہور افسانہ 'ٹوبہ ٹیک سنگھ' کس کی تصنیف ہے؟
(A) اشفاق احمد (B) پریم چند (C) سعادت حسن منٹو✓ (D) امتیاز علی تاج

100. "سیرۃ النعمان" کے مصنف ہیں۔
(A) شبلی نعمانی✓ (B) رشید احمد صدیقی
(C) شیخ محمد اکبر (D) عبداللہ حمی

Paper Code
B

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

ROLL NO.

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper.
❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper & Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?
(A) Pakistan (B) Russia (C) China (D) US
The correct answer is B, so shade the answer in this manner. [A] [■] [C] [D]

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Self Assessment Paper-2

PUBLIC SERVICE COMMISSION
WRITTEN TEST FOR RECRUITMENT TO THE POST OF
LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **Syphilis is caused by:**
   A) Spirochete✓ C) Water blooms
   B) Nostoc D) Cyanobacteria
2. **AIDS is caused by:**
   A) Bacteria C) Fungi
   B) Virus✓ D) Alga
3. **Brain is protected and enclosed in:**
   A) Lumbar vertebrae C) Vertebral column
   B) Coccyx **D) Cranium✓**
4. **Longest bone in the human skeleton is:**
   A) Ulna C) Tibia
   B) Fibula **D) Femur✓**
5. **Hips and shoulder joints are examples of:**
   A) Hinge Joints C) Synovial Joints
   B) Ball and Socket Joints✓ D) Cartilaginous Joints
6. **Pseudo-coelomates have a body cavity but it is not true coelom. Which one of the following is included in the group.**
   A) Planaria C) Earthworm

   B) Tapeworm **D) Ascaris✓**
7. **Digestion of ________ starts in oral cavity due to the action of enzyme present in saliva.**
   A) Starch✓ C) Fatty Acids
   B) Cellulose D) Polypeptides
8. **Food enters from stomach into small intestine through:**
   A) Pyloric Sphincter✓ C) Semilunar valve
   B) Cardiac Sphincter D) Diaphragm
9. **________ are the part of a gastric gland which produce hydrochloric acid.**
   A) Parietal Cells✓ C) Chief Cells
   B) Goblet Cells D) Zymogen Cells
10. **Protein components of food are digested by the enzymatic secretion of:**
    A) Goblet Cells **C) Zymogen Cells✓**
    B) Parietal Cells D) Oxyntic Cells
11. **Digestive System consists of different layers, the innermost is known as:**
    A) Submucosa C) Muscularis
    B) Mucosa✓ D) Serosa
12. **The organelle involved in detoxification of drugs and poisons in the liver cells is:**
    A) Smooth Endoplasmic Reticulum✓ C) Golgi Apparatus
    B) Rough Endoplasmic Reticulum D) Lysosomes
13. **Down's syndrome is characterized by ________ at chromosome 21.**
    A) Trisomy✓ C) Polysomy
    B) Monosomy D) Disomy
14. **Which of the following is an example of autosomal non-disjunction?**
    A) Turner's Syndrome C) Metastasis
    B) Jacob's Syndrome **D) Down's syndrome✓**
15. **Infertility, short height, webbed neck and low hairline at lack are symptoms of ____ syndrome.**
    A) Turner's✓ C) Edward's
    B) Down's D) Patau's
16. **The concentration of sodium ions in body fluids is controlled by the hormone:**
    A) Renin C) Angiotensin
    B) Aldosterone✓ D) CPK
17. **________ is the structure in female reproductive system in which fertilization takes place:**
    A) Ovaries C) Cervix
    B) Uterus **D) Oviduct✓**
18. **Which of the following directly develops into sperms:**
    A) Primary spermatocytes C) Secondary spermatocytes
    B) Spermatids✓ D) Spermatogonia
19. **FSH stimultes the production of oestrogen hormone which has two targets ________ and ________.**
    A) Uterus, posterior pituitary **C) Uterus, anterior pituitary✓**
    B) Ovaries, uterus D) Ovaries, hypothalamus
20. **Select the organelle which is only present in animal cells:**
    A) Centrioles✓ C) Microtubules

B) R.E.R
D) Ribosomes

21. Syphilis is a sexually transmitted disease and can also damage:
A) Hair
B) Heart✓
C) P.N.S
D) Birth canal

22. Chlorophyll 'a' and chlorophyll 'b' differ in one of the functional groups... Chlorophyll 'a' has:
A) -CHO
B) -OH
C) $-CH_3$✓
D) $-NH_2$

23. Glycerate-3 phosphate in the presence of ATP and reduced NADP from light dependent stage is reduced to:
A) 3-carbon compound✓
B) Ribulose bisphosphate
C) 5-carbon compound
D) 6-carbon compound

24. Calvin cycle occurs in:
A) Grana of chloroplast
B) Stroma of chloroplast✓
C) Chlorophyll (Reaction centre)
D) Roots of plants

25. Restriction enzyme EcoR1 cuts DNA to produce:
A) Blunt ends
B) Non-palindromic ends
C) Sticky ends✓
D) Split ends

27. Restriction endonucleases are produced by:
A) Fungi
B) Algae
C) Bacteria✓
D) Viruses

28. The number of amina acids that have been found to occur in cells and tissues are:
A) 170✓
B) 20
C) 25
D) 40

29. Most proteins are made up of ________ type of amino acids:
A) 20
B) 170
C) 25✓
D) 200

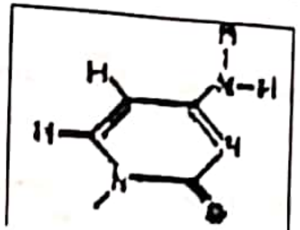
30. If in lipids there is an higher proportion of unsaturated fatty acids then it will be:
A) Oils✓
B) Waxes
C) Phenols
D) Fats

31. When X-rays are passed through crystalline DNA, it shows helix making one twist every:
A) 2nm
B) 3.4 nm✓
C) 34nm
D) 4nm

32. Living part of ecosystem is:
A) lithosphere
B) Hydrosphere
C) Community
D) Biosphere✓

33. A living association between two living organisms of different species which is beneficial to both the partners is called:
A) Commensalism
B) Parasitism
C) Mutualism✓
D) Predation

34. Following is the structure of:



A) Uracil
B) Thymine
C) Guanine
D) Cytosine✓

35. The structures which are reduced during the course of evolution and have no apparent function are called:
A) Regenerated organs
B) Vestigial organs✓
C) Saltatory organs
D) Useless organs

36. When a gene suppresses the effect of another gene at another locus the phenomenon is termed as:
A) Over dominance
B) Pleiotropy
C) Epistasis✓
D) Co-dominance

37. Phenylketonuria is an example of:
A) Polyploidy
B) Transmutation
C) Inversion
D) Point mutation✓

38. ________ is a good example of polymorphism.
A) Hydra
B) Starfish
C) Obelia✓
D) Euplectella

39. Name common gut roundworm parasite of human and pigs.
A) Aascaris lumberocoides✓
B) Lumbericus terresaris
C) Pheretima posthuma
D) Hirudo Medicinalis

40. ________ is also called liver fluke.
A) Dugesia
B) Taenia
C) Fasciola✓
D) Coral

41. Oxyntic cells in stomach produces:
A) Pepsin
B) Pepsinogen
C) Gastrin
D) HCl✓

42. The hormone which inhibits the secretion of pancreatic juice is:
A) Secretin✓
B) Gastrin
C) Thyroxine
D) Parathormone

43. W.O.F is a respiratory disorder related to malnutrition:
A) Cancer
B) Asthma
C) Emphysema
D) Tuberculosis✓

44. All organisms carry out hundreds of reaction in their bodies which altogether are known as:
A) Anabolism
B) Catabolism
C) Metabolism✓
D) None

45. The breaking down of complex organic molecules into simpler compounds in order to obtain energy:
A) Anabolism
B) Catabolism✓
C) Metabolism
D) None

46. The mean concentration of water in the tissue fluid of mammals.

A) 96% B) 97%
C) 98%✓ D) 99%

47. The concentration of water in the tissue fluid of mammals in maintained within a range of:
A) 96-98%✓ B) 97-99%
B) 96-99% D) 95-97%

48. The depression in the center of concave side of kidney is called:
A) Ureter B) Hilus✓
C) Urethra D) Medulla

49. The outer dark red region of kidney:
A) Cortex✓ B) Medulla
C) Pyramid D) Ureter

50. The inner pale red region of kidney:
A) Cortex B) Medulla✓
C) Pyramid D) Ureter

51. The control of water and other ingredients in the blood to maintain a constant or nearly constant water potential in the body is called:
A) Osmoregulation✓ B) Excretion
C) Metabolism D) Hydration

52. The kidney stones can be diagnosed by:
A) X-rays B) Sonography
C) Both a & b D) None✓

53. The first point of attachment of muscles with the bones is called:
A) Origin✓ B) Insertion
C) Tendon D) Ligament

54. The second point of attachment to bones by means of tough, whitish cords called:
A) Origin B) Insertion✓
C) Tendon D) Ligament

55. Some muscles are attached to bones by means of tough, whitish cords called:
A) Origin B) Insertion
C) Tendons✓ D) Ligaments

56. Bending of arm at elbow joint is called:
A) Flexion✓ B) Extension
C) Flexor D) Extensor

57. Straightening of arm at elbow joint is called:
A) Flexion B) Extension✓
C) Flexor D) Extensor

58. The structural and functional unit of nervous system in all animals including man is the:
A) Neuron✓ B) Nephron
C) Brain D) Gland

59. The projection that carries impulses away from the cell body of neuron is called:
A) Myelin Sheath B) Schwann Cell
C) Node of Ranvier D) Axon✓

60. Fatty substance covering the axon:
A) Myelin Sheath✓ B) Schwann Cell

C) Node of Ranvier D) Gland

61. The neurons which carry nerve impulses from receptors to central nervous system are called:
A) Sensory Neurons✓ B) Motor Neurons
C) Associated Neurons D) None

62. The neurons which carry nerve impulses from central nervous system to effectors are called:
A) Sensory Neurons B) Motor Neurons✓
C) Associated Neurons D) None

63. The functional unit of nervous system:
A) Reflex Arc✓ B) Reflex
C) Neuron D) Nephron

64. An unvarying and automatic response to a specific stimulus:
A) Reflex Arc B) Reflex✓
C) Neuron D) Nephron

65. A nervous pathway which operates automatically without having to wait for directions from the brain is called:
A) Reflex Arc✓ B) Reflex
C) Neuron D) Nephron

66. Which one organ is not a receptor?
A) Nose B) Skin
C) Tongue D) Muscle✓

67. The average diameter of eye:
A) 2.0 cm B) 2.2 cm
C) 2.4 cm✓ (d) 2.6 cm

68. Yeast reproduce by:
A) Binary Fission B) Spore Formation
C) Budding✓ D) Runners

69. Type of vegetative propagation in strawberry:
A) Cuttings B) Grafting
C) Suckers D) Runners✓

70. Type of vegetative propagation in mint:
A) Cuttings B) Grafting
C) Suckers✓ D) Runners

71. Type of vegetative propagation in Bryophyllum:
A) Cuttings B) By leaf✓
C) Suckers D) Runners

72. The portion of cutting embedded in soil should have at least:
A) Three nodes B) Four nodes
C) Two nodes D) One node✓

73. An example of fruit dispersal by water:
A) Bombax B) Medicago
C) Mulberry D) Daffodils✓

74. The scar which indicates the place of attachment of a see in the fruit:
A) Epicotyl B) Hypocotyl
C) Micropyle D) Hilum✓

75. The portion of the embryo above the point of attachment of cotyledons to embryo axis and below the plumule:

A) Epicotyle✓ B) Hypocotyle
C) Micropyle D) Hilum

76. The portion of the embryo below the point of attachment of cotyledons to embryo axis and above the radicle:
A) Epicotyle B) Hypocotyl✓
C) Micropyle D) Hilum

77. In the grain of maize, the cotyledon is modified into an organ called:
A) Embryo B) Scutellum✓
C) Coleorhiza D) Endosperm

78. Number of chromosomes in garden pea:
A) 44 B) 34
C) 24 D) 14✓

79. The position of a gene on the chromosome:
A) Linkage B) Linkage group
C) Karyotype D) Locus✓

80. The entire chromsome complement of an individual or cell:
A) Linkage B) Linkage group
C) Karyotype✓ D) Locus

81. Kamran Baradari is one of the oldest Mughal monuments and located in Lahore. Who exactly was Kamran?
(A) Brother of Queen Noorjahan
(B) Son of Babar / step brother of Humayun✓
(C) First husband of Noorjahan
(D) Brother of Sher Shah Suri

82. The youngest son of Maharaja Ranjit Singh was elevated as Maharaja at a tender age of about 5 years. What was his name?
(A) Naunahal Singh (B) Kharrak Singh
(C) Daleep Singh✓ (D) Langa Singh

83. M.A.O College of Aligarh got the status of University in:
(A) 1920✓ (B) 1917
(C) 1918 (D) 1919

84. Name the person who took part in all three Round Table Conferences of 1930-32 and was the first Foreign Minister of Pakistan.
(A) Sir Muhammad Zafarullah✓
(B) Chaudhary Muhammad Ali
(C) Sikandar Mirza
(D) Ghulam Muhammad

85. Which of following became first city in China to ban the consumption of dog and cat meat?
(A) Wuhan (B) Shenzhen✓
(C) Guangzhou (D) None of these

86. Mahmoud Jibril has died of Coronavirus after spending two weeks in an Egyptian hospital, he was Former Prime Minister of which of the following country?
(A) Iraq (B) Libya✓
(C) Turkey (D) Egypt

87. Tripoli was conquered in the reign of?
(A) Usman (R.A)✓ (B) Omar (R.A)
(C) Ali (R.A)

88. Which battle decided the fate of Syria?
(A) Badr (B) Yarmuk
(C) Hunain✓

89. Simple conical projections with one standard parallel are used for:
(A) Maps for higher latitudes (B) Maps for the polar regions
(C) Maps for the lower latitudes (D) None of these✓

90. Tornadoes affect areas ranging from:
(A) A few yards to a quarter of a mile in diameter (B) A few furlongs to about 5 miles in diameter
(C) A few mile to about 10 miles in diameter✓ (D) None of these

91. In a class of 550 students, 42% wish to go to college. How many students wish to attend the college?
(A) 210 (B) 220
(C) 231✓

92. 0.03 × 10=?
(A) 30 (B) 3
(C) 0.3✓

93. If I ___ you, I would not lose temper.
(A) Was (B) Were✓ (C) Had been (D) Would be

94. She would not have borrowed the diamond necklace if she ___ wiser.
(A) Was (B) Were (C) Had been✓
(D) Could have been

95. Meteorology is:
(A) Science of atmosphere✓ (B) Study of weights & measures
(C) Study of growth (D) Study of stars

96. The credit of developing the polio vaccine goes to:
(A) Jonas Salk✓ (B) Albert Sabin (C) Salmon Waksman
(D) None of these

97. An inkjet printer is an example of a(n):
(A) Laser printer (B) Impact printer
(C) COM printer (D) Non-impact printer✓

98. ________ is not an output device.
(A) Monitor (B) Plotter (C) Speaker (D) Scanner✓

99. مشہور ڈرامہ "قرطبہ کا قاضی" کس کی تصنیف ہے؟
(A) سید امتیاز علی تاج✓ (B) احمد ندیم قاسمی
(C) پطرس بخاری (D) سعادت حسن منٹو

100. 'خوشبو' کس کی شاعری کا مجموعہ ہے؟
(A) کشور ناہید (B) ناصر کاظمی
(C) پروین شاکر✓ (D) فیض احمد فیض

Paper Code
C

ROLL NO.

PUBLIC SERVICE COMMISSION

Time Allowed: Two Hours Maximum Marks: 100

INSTRUCTIONS

❶Write your allotted Roll No. in the top right corner of QUESTION PAPER and in the specified place of ANSWER SHEET. ❷Write PAPER CODE on your ANSWER SHEET carefully. ❸Read QUESTION PAPER carefully and mark your answer on the ANSWER SHEET. ❹Each question has four options. Fill only one box that you think in the correct answer. Each question caries 1 mark. ❺Instructions for filling box have been given on the Answer Sheet. Read them carefully before you attempting Question Paper. ❻Read the instructions for filling your ROLL NO. and marking your answer on the ANSWER SHEET before starting to answer. ❼Sign the Answer Sheet in the box provided at the bottom corner. ❽Return both Question Paper&Answer Sheet, to the Staff, at the end of the test.

Signature of the Candidate

☞ Every question contain four choices in the form of A, B, C and D. Only one out of them is correct. Your answer sheet has four boxes A B C and D for each question. Select the correct answer and blacken box of the corresponding letter completely and darkly. For example:

Q. Which nation has become the world's first to successfully complete human trials of its COVID-19 vaccine?

(A) Pakistan (B) Russia (C) China (D) US

The correct answer is B, so shade the answer in this manner. A C D

NOTE: THIS ☛ SHOWS IMPORTANT QUESTIONS (GUESS) FOR THE COMING EXAMS.

Self Assessment Paper-3

PUBLIC SERVICE COMMISSION

WRITTEN TEST FOR RECRUITMENT TO THE POST OF LECTURER / SUBJECT SPECIALIST IN PHYSICS (BS-17)

1. **The total amount of genetic material in a chromosome set of an individual:**
   A) Linkage B) Linkage group
   C) Karyotype **D) Genome✓**
2. **Each member of a homologous pair is called a:**
   A) Heredity **B) Homologue✓**
   C) Allele D) Gene
3. **An individual with a homozygous genotype:**
   A) Heterozygote **B) Homozygote✓**
   C) Hermaphrodite D) Homologue
4. **An individual with a heterozygous genotype:**
   A) Heterozygote✓ B) Homozygote
   C) Hermaphrodite D) Homologue
5. **Number of types of gametes formed by a homozygote:**
   A) One✓ B) Two
   C) Three D) Four
6. **A mating in which an individual showing a dominant phenotype is crossed with an individual showing its recessive phenotype:**
   A) Reciprocal cross B) Punnett square
   C) Test cross✓ D) Genotype
7. **Oxygen carrying protein in our red blood cells:**
   A) Fibrinogen **B) Haemoglobin✓**
   C) Globulin D) Albumin
8. **The organs which are specifically built to receive particular type of stimuli are called:**
   A) Receptors✓ B) Effectors
   C) Neurons D) Glands
9. **The organs which play their role according to stimuli:**
   A) Brain B) Spinal Cord
   C) Glands **D) Both a & b✓**
10. **The organs producing particular responses are called:**
    A) Receptors **B) Effectors✓**
    C) Neurons D) Glands
11. **The structural and functional unit of nervous system in all animals including man is the:**
    A) Neuron✓ B) Nephron
    C) Brain D) Gland
12. **The projection that carries impulses away from the cell body of neuron is called:**
    A) Myelin Sheath B) Schwann Cell
    C) Node of Ranvier **D) Axon✓**
13. **The removal of water from the tips and margins of leaves in the form of tiny droplets of water is known as:**
    A) Photosynthesis B) Respiration
    C) Guttation✓ D) Excretion
14. **The loss of water in the form of water vapours from the aerial parts of the plants is called:**
    A) Transpiration✓ B) Guttation
    C) Respiration D) Excretion
15. **Latex is produced by:**
    A) Rubber plant✓ B) Acacia arabica
    C) Hibiscus D) Pines
16. **Gums are secreted by:**
    A) Rubber plant **B) Acacia arabica✓**
    C) Hibiscus D) Pines
17. **Mucilage is secreted by:**
    A) Rubber plant B) Acacia arabica
    C) Hibiscus✓ D) None
18. **Pine secrete:**
    A) Latex **B) Resins✓**
    C) Mucilage D) None
19. **In arthropods, the body cavity is in the form of:**
    A) Coelem C) Psedocoelem
    B) Haemocoel✓ D) Enteron
20. **Trypsinogen is activated to trypsin by:**
    A) HCl C) Mucus
    B) Enterokinase✓ D) Gastrin

21. The emulsification of fats is the role of:
A) Saliva
B) Pancreatic juice
C) Gastrin
D) Bile✓

22. Highly toxic nitrogenous excretory product is:
A) CO_2
B) Uric Acid
C) Urea
D) Ammonia✓

23. Humans have homeostatic thermostat present in a specified portion of the brain that is:
A) Lateral ventricle
B) Thalamus
C) Spinal Cord
D) Hypothalamus✓

24. The disease in which death of small number of cells in the basal ganglia leads to inability to select and initiate patterns of movement is known as:
A) Fever
B) Alzheimer's Disease
C) Epilepsy
D) Parkinson's Disease✓

25. Cell wall structure of a cell of unknown origin was studied and was found to contain polysaccharide chain linked with short chains of amino acid. What do u think it can be??
A) Bacteria✓
B) Fungi Cell
C) Algae
D) Cortex cells

26. Ribosomes present in prokaryotes are:
A) 80S
B) 60S
C) 50S
D) 70S✓

27. Functionally mesosomes can be compared with:
A) Ribosomes
B) Mitochondria✓
C) Polysomes
D) Golgi bodies

28. Students were asked to give a guess about a unicellular orgahism with darkly stained nucleus.. W.O.F can be straight away excluded from the list:
A) Paramecium
B) Amoeba
C) Plasmodium
D) Lactobacillus✓

29. Binary fission is a characteristic cell division NOT found in:
A) Pseudomonas
B) Campylobacter
C) Euglena✓
D) E.coli

30. __________ are the specific structures related to monosaccharides:
A) Glycosidic bond
B) Keto group
C) Maltose✓
D) Fructose

31. __________ are the major site for storage of glycogen in animal's body:
A) Muscle and liver✓
B) Around things and belly
C) Around belly and hips
D) Liver and kidneys

32. All enzymes are __________.
A) Fibrous proteins
B) Low molecular weight proteins
C) Lipoproteins
D) Globular proteins✓

33. The thyroxine hormones of thyroid glands act directly on:
A) Iodine metabolism
B) Protein metabolism
C) Glucose metabolism
D) Basal metabolic rate✓

34. All the hormones released by anterior pituitary are tropic hormones except:
A) TSH
B) STH✓
C) ACTH
D) Gonadotrophin hormone

35. W.O.F is endocrine as well as exocrine:
A) Liver
B) Adrenals
C) Thyroid
D) Pancrease✓

36. Ovulation is suppressed by progestrone via:
A) Only by inhibition of LH✓
B) Inhibition of LH & stimulation of FSH
C) Inhibition of FSH & stimulation of LH
D) Inhibition of both FSH & LH

37. The antibody molecule consists of __________ polypeptide chains:
A) Eight
B) Four✓
C) Six
D) Two

38. Low partial pressure of oxygen in tissues favour __________ of oxyhaemoglobin.
A) Dissociation✓
B) Formation
C) Stability
D) Transformation

39. Respiratory tubules are termed as bronchioles when they attain the diameter __________ or lesser:
A) 1.2 cm
B) 1 cm
C) 1mm✓
D) 1.2 mm

40. Elastic fibres are absent in the walls of __________:
A) Aorta
B) Arteries
C) Veins✓
D) Capillaries

41. A type of blood cell that produces heparin is __________:
A) Basophil✓
B) Neutrophil
C) Eosinophil
D) Monocyte

42. Thoracic lymph duct of the lymphatic system opens into __________:
A) Superior vena cava
B) Subclavian Vein✓
C) Inferior vena cava
D) Renal vein

43. Select the part of nephron which is NOT permeable to water and stops its outflow:
A) Glomerulus
B) Proximal Tubule
C) Ascending loop✓
D) Descending loop

44. Vessels which carry blood to the glomerulus are called:
A) Efferent
B) Renal vein
C) Vesa recta
D) Afferent arterioles✓

45. Structures found in different species which are believed to have a common evolutionary origin are called:
A) Homologous✓
B) Analogous
C) Vestigial
D) Fossilized

46. Which one of the following is X-linked trait?
A) Male pattern baldness
B) Diabetes mellitus
C) Haemophilia✓
D) Erythroblastosis fietalis

47. A character determined by three alleles is:
A) Human skin colour
B) Human blood group✓
C) Human eye colour
D) Human Rh factor

48. The total number of genes in a population is called:
A) Gene pool✓
B) Allele pool
C) Genome
D) Genomic library

49. __________ is the branch of PHYSICS used for the identification and interpretation of fossils.

A) Evolution
B) Paleontology✓
C) Zoogeography
D) Biodiversity

50. Out of the given options, choose the one which shows the structures found only in plants
A) Vacuole, Chloroplast, Ribosomes
B) Chloroplast, Microtubules, Peroxisomes
C) Chloroplast, Cell Wall, Vacuole✓
D) Chloroplast, Cell Wall, Mitochondria

51. Presence of large central vacuole is the characteristic of:
A) Prokaryotes
B) Protists
C) Fungi
D) Plants✓

52. The basic structure of plasma membrane is provided by:
A) Proteins
B) Cholesterols
C) Cytoskeleton
D) Phospholipids✓

53. A hormone released from posterior pituitary lobe acts to be actively transport water from filtrate is collecting tubules back to kidney is shown as:
A) Renin
B) Antidiuretic hormone✓
C) Angiotensin
D) Growth Factor

54. The removal metabolic waste from the blood is called:
A) Thermoregulation
B) Osmoregulation
C) Kidney Failure
D) Excretion✓

55. Photosystem I has chlorophyll a molecules which absorb maximum light of:
A) 680 nm
B) 780 nm
C) 700 nm✓
D) 580 nm

56. Cyclic flow or C4 photosynthesis produces:
A) ATP and CO_2
B) ATP✓
C) Only CO_2
D) Only Oxygen

57. Immediate product formed after CO_2 fixation in Calvin Cycle is:
A) Unstable 6-carbon compound✓
B) Unstable 5-carbon compound
C) Unstable 4-carbon compound
D) Unstable 3-carbon compound m

58. Functional group of chlorophyll a is:
A) $—CH_3$✓
B) —CHO
C) —COOH
D) —OH

59. The modified plasmid or phage DNA is called:
A) Clone DNA
B) Recombinant DNA✓
C) cDNA
D) rDNA

60. The rapid exchange of materials through carrier proteins across the plasma membrane is called:
A) Passive Diffusion
B) Active Transport
C) Endocytosis
D) Facilitated Diffusion✓

61. The inner membrane of mitochondria form extensive infoldings called:
A) Cristae✓
B) Cisternae
C) Lamella
D) Bifidae

62. Which one of the following organelle is found in both prokaryotic and eukaryotic cells?
A) Centriole
B) Endoplasmic Reticulum
C) Nucleus
D) Ribosome✓

63. The compounds which on hydrolysis yield polyhydroxy aldehyde or ketone subunits are:
A) Lipids
C) Polynucleotides

B) Proteins
D) Carbohydrates✓

64. A sarcomere is the region of a myofibril between two successive:
A) M-lines
B) Z-lines✓
C) I-bands
D) T-tubules

65. The sarcolemma of muscle fibre folds inwards and forms a system of tubes which runs through the sarcoplasm called:
A) Myofilaments
B) Sarcoplasmic reticulum
C) Z-lines
D) Transverse tubules✓

66. According to sliding filament theory, when muscle fibers are stimulated by nervous system, which of the following changes occurs?
A) I-bands shorten✓
B) H-zone becomes more visible
C) Z-lines move further apart
D) A-bands shorten

67. If lactic acid build up in thigh muscles, it causes muscle tiredness and pain. This condition is called:
A) Muscle Fatigue✓
B) Tetany
C) Cramps
D) Oxygen debt in muscles

68. Thyroxine deficiency in adults' results in a condition called:
A) Cretinism
B) Hypothyroidism
C) Thyrotoximia
D) Myxoedema✓

69. α-cells of pancreas secrete a hormone known as:
A) Glucagon✓
B) Insulin
C) Gastrin
D) Rennin

70. X-linked recessive trait is:
A) Hypophosphatemia
B) Vitamin-D resistant rickets
C) Haemophilia✓
D) Diabetes Mellitus

71. Bacterial cells take up recombinant plasmids when they are treated with:
A) $CaCl_2$✓
B) NaCl
C) KCl
D) NaOH

72. Which one of the following is made up of radioactively labelled nucleotides?
A) Phage DNA
B) Genomic Library
C) Recombinant DNA
D) Gene Probe✓

73. A technique in transgenic animals in which desired gene is inserted into the eggs of animal is called:
A) Embryonic Stem Cell mediated Transfer
B) Microinjection✓
C) Retro-virus mediated gene Transfer
D) Virus vectors

74. Ozone is a layer of atmosphere extending from ________ km above earth and absorbs ultraviolent radiations.
A) 10-50✓
B) 50-60
C) 5-30
D) 10-80

75. Light rays from the sun are absorbed by CO2 and re-radiate as ______ radiations.
A) Ultraviolent
C) Infra-Red✓

B) Indigo
D) Green

76. The gonadotrophic hormones of anterior lobe of pituitary include:
A) Prolactin, Thyroid Stimulating Hormone, Somatotropin Hormone
B) Follicle Stimulating Hormone, Luteinizing Hormone, Prolactin✓
C) Adrenocorticotrophic Hormone, Luteinizing Hormone, Follicle Stimulating Hormone
D) Luteinizing Hormone, Follicle Stimulating Hormone, Thyroid Stimulating Hormone

77. Over-activity of cortical hormone of adrenal gland causes
A) Addison's disease
B) Parkinson's disease
C) Cushing's disease✓
D) Down's syndrome

78. How many iodine atoms are present in thyroxine?
A) 3✓
B) 4
C) 2
D) 5

79. T-lymphocytes recognize antigen and attack microorganisms or transplanted organ and tissues. This effect is called
A) Cell-mediated response
B) Humeral Immune response✓
C) Active immunity
D) Passive immunity

80. Which part of antibody recognizes the antigen during immune response?
A) Heavy part
B) Light part
C) Constant part
D) Variable part✓

81. Khudadad Khan was the first South Asian soldier in the British Army to receive the highest military award for gallantry, the Victoria Cross, during the First World War. In which country was the fighting where he performed the act of bravery, which earned him the Victoria Cross?
(A) France (B) Austria
(C) Belgium✓ (D) Netherlands

82. Deosai National Park is remarkable as it is one of the highest plateaus in the world with an average elevation of 4,114 meters. In which region of Pakistan is it located?
(A) Balochistan
(B) Potohar-Punjab
(C) Gilgit Baltistan✓
(D) Khyber Pakhtunkhwa

83. Name the first Governor of Sindh from August 1947 to October 1948:
(A) Hamida Khoro **(B) Ghulam Hussain Hidayatullah✓**
(C) Nabi Baksh Talpur (D) None of them

84. Name the first Governor of NWFP from August 1947 to April 1948.
(A) Sir George Canningham✓ (B) Sir Francis Moody
(C) Allan Perry Keane (D) Sir Francis Messervy

85. Who was selected as leader of Labour party in UK in April 2020?
(A) Sadiq Khan **(B) Keir Starmer✓**
(C) Angela Rayner (D) Johnson Slate

86. The speed of hypersonic missile is _____ the speed of sound which is launched by US Navy?
(A) 20 times (B) 15 times
(C) 10 times **(D) 5 times✓**

87. Omar (R.A) established regular military institution in?
(A) 10 Hijrah (B) 13 Hijrah
(C) 15 Hijrah✓

88. Muslims martyred in the war against Musailma Kazzab were?
(A) 12000 (B) 1500
(C) 1300
(D) 1000✓

89. On a weather map the word 'L':
(A) Denotes a low pressure zone✓ (B) Denotes a low temperature zone
(C) Denotes a low rainfall zone (D) None of these

90. Large-scale maps are used for:
(A) Small areas✓ (B) Large areas
(C) Areas of moderate extent (D) None of these

91. When you divide 0.7 by 10, you will get:
(A) 7 **(B) 0.07✓**
(C) 70 (D) 0.007

92. If all the members of a team are juniors or seniors and if the ratio of juniors to seniors on the team is 3:5, what percent of team members are seniors?
(A) 37.5% (B) 40%
(C) 60% **(D) 62.5%✓**

93. We asked the guests what places they ___ the next day.
(A) Would visit✓ (B) Were visiting
(C) Will visit (D) Had visited

94. If you went away now, we ___ you.
(A) Missed (B) Will miss **(C) Would miss✓**
(D) Would have missed

95. Who invented the ballpoint pen?
(A) Waterman (B) Oscar (C) Wilson **(D) Laszlo Biro✓**

96. Blaise Pascal is associated with:
(A) Calculation Machine (B) Computer
(C) Cinema (D) Laszlo Biro

97. How many types of graphic cards are used?
(A) 2 **(B) 3✓** (C) 4 (D) 5

98. The monitor having VGA cards has resolution:
(A) 1024 × 768 pixels (B) 800 × 600 pixels
(C) 640 × 570 pixels **(D) 320 × 200 pixels✓**

.99 مندرجہ ذیل میں ضرب المثل کون سی ہے؟
(A) اپنے منہ میاں مٹھو بننا (B) بوڑھی گھوڑی لال لگام✓
(C) عید کا چاند ہونا (D) پانی میں آگ لگانا

.100 مشہور ناول 'اداس نسلیں' کس کی تصنیف ہے؟
(A) بانو قدسیہ (B) اشفاق احمد (C) عبداللہ حسین✓ (D) قرۃ العین حیدر

Expected Questions for Coming Exams

1. **Work done in lowering the bucket into the well is:**
   (A) Zero (B) Positive
   (C) Negative (D) None of these

Explanatory Answer: (C)

We are applying the force in the upward direction so that it may not fall freely. But the displacement is in the downward direction. So angle between $\vec{F}$ and $\vec{d}$ is 180° and

Work $= F\,d\cos 180°$
$= -Fd$

2. **A 100 Kg car is moving at a speed of 10 m/sec and comes to rest after covering a distance of 50 m. The amount of work done against friction is:**
   (A) $+5\times10^1$ J (B) $+5\times10^2$ J
   (C) $+5\times10^3$ J (D) $+5\times10^4$ J

Explanatory Answer: (C)

$m = 100$ kg, $v_i = 10$ m/sec $v_f = 0$, $d = 50$ m

Use loss of KE = work done

$\frac{1}{2}m(v_f^2 - v_i^2)$ = work done

3. **Which force is not a conservative force?**
   (A) Frictional force (B) Gravitational force
   (C) Electric force (D) Elastic spring force

Explanatory Answer: (A)

You can verify your answer "For your Information" on page 82 of the Textbook.

4. **The work done by a force keeping an object in circular motion with constant speed is:**
   (A) Zero J (B) 1 J
   (C) 0.1 J (D) 0.01 J

Explanatory Answer: (A)

When a body is revolving in a circle, centripetal force acts on it which is always toward centre. Since the displacement of the body is along the tangent, hence angle between $\vec{F}$ and $\vec{d}$ is 90°, which means that work $= F\,d\cos 90° =$ zero

5. **A body of weight 1 N has a kinetic energy of 1 Joule when its speed is:**
   (A) 1.46 m sec^{-1} (B) 2.44 m sec^{-1}
   (C) 3.42 m sec^{-1} (D) 4.43 m sec^{-1}

Explanatory Answer: (D)

Weight = 1 N ; $m = \frac{W}{g} = \frac{1}{9.8}$ kg

K.E. $= \frac{1}{2}mv^2$

$1\text{ J} = \frac{1}{2}\left(\frac{1}{9.8}\text{kg}\right)v^2$

$v^2 = 19.6$ *i.e.*, $v = 4.43$ m sec^{-1}

6. **Kinetic energy of a body of mass 2 kg is 8 Joules. Kinetic energy of a body of mass 4 kg moving with same velocity as that of first body, will be:**
   (A) 2 J (B) 4J
   (C) 16J (D) 64J

Explanatory Answer: (C)

If mass is doubled, then according to K.E. $= \frac{1}{2}mv^2$, K.E. will also be doubled.

7. **When two protons are brought closer potential energy of both of them:**
   (A) Increases (B) Decreases
   (C) Remains same (D) None of these

Explanatory Answer: (A)

Protons are positively charged particles and repel each other. When they are brought closer, work has to be done upon them which is stored as potential energy.

8. **A rubber ball falling from a height of 5 m rebounds from a hard floor and loses 30% of its energy in the impact. The height of the rebound is:**
   (A) 4 m (B) 3.5 m
   (C) 3 m (D) 5 m

Explanatory Answer: (B)

30% of 5 m is 1.5 metres.

This is the loss. Hence answer = 5 – 1.5 = 3.5 m

9. **A bullet of mass 100 grams is fired with a velocity of 10 m sec^{-1} from a gun of mass 1 kg. The ratio of KE of bullet to that of gun is:**
   (A) 100 : 1 (B) 10 : 1
   (C) 1 : 10 (D) 1 : 100

Explanatory Answer: (B)

From law of conservation of momentum,

$m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2'$

$0 + 0 = 0.1\times10 + 1\times v_2'$

$v_2' = -1$ m sec^{-1}

Hence K.E. of bullet $= \frac{1}{2}m_1v_1' = \frac{1}{2}\times0.1\times100 = 5$ J

K.E. of gun $= \frac{1}{2}m_2v_2' = \frac{1}{2}\times1\times(-1)^2 = 0.5$ J

Their ratio is 5 : 0.5

or 10 : 1 Ans.

10. **A bomb of mass 9 kg explodes into two pieces of mass 3 kg and 6 kg. The velocity of 3 kg mass is 16 m sec^{-1}. The KE of 6 kg mass will be:**
   (A) 96 (B) 112
   (C) 180 (D) 192

Explanatory Answer (D)

Law of conservation of momentum is

$m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2'$

$mv = m_1v_1' + m_2v_2'$

$9 \times 0 = 3 \times 16 + 6\, v_i'$

$v_2' = -8 \text{ m sec}^{-1}$

K.E. of 6 Kg mass $= \frac{1}{2} m_2 v_2' = \frac{1}{2} \times 6 \times (-8)^2 = 192$ J

11. One radian is equal to:

(A) 30.3° (B) 45.3°
(C) 50.3° (D) 57.3°

Explanatory Answer (D)

Since 2π radian $= 360°$,

Hence 1 radian $= \frac{360°}{2\pi}$

$= \frac{360°}{2 \times 3.14} = 57.3°$

12. Centripetal force performs:

(A) Maximum work (B) Negative work
(C) Positive work (D) None of these

Explanatory Answer (D)

Since the centripetal force is directed towards centre and displacement is along the tangent, so work done by centripetal force is $Fd \cos 90° =$ zero.

13. A stone tied to the end of a 20 cm long string is whirled in a horizontal circle. If centripetal acceleration is 9.8 m/sec², then its angular velocity in rad/sec is:

(A) $\frac{22}{7}$ (B) 7
(C) 14 (D) 21

Explanatory Answer (B)

$a_c = 9.8 \text{ m/sec}^2$

$w = ?$ (in rad/sec)

$r = 20 \text{ cm} = 0.2 \text{ m}$

$a = r\omega^2$ or $\omega = \sqrt{\frac{a}{r}} = \sqrt{\frac{9.8}{0.2}} = 7$ rad/sec

14. A particle of mass 200 gms is moving along a circle of radius 500 cm with a speed of 30 m/sec. Its angular momentum about the centre of circle in SI unit is given by:

(A) 3×10^4 (B) 3×10^3
(C) 3×10^2 (D) 3×10^1

Explanatory Answer (D)

$m = 200$ grams $= 0.2$ kg

$r = 500 \text{ cm} = 5\text{m}$

$v_o = 3$ m/sec

Use $L = mv_o r$

15. If the orbital speed of Earth around the Sun is given as 30 Km/sec, radius of circular path as 1.5×10^{11} m, and 6×10^{24} kg as mass of Earth, then angular momentum of Earth in SI unit is given as:

(A) 2.7×10^{40} (B) 7.2×10^{40}
(C) 2.7×10^{37} (D) 7.2×10^{37}

Explanatory Answer (A)

$v_o = 30 \text{ km/sec} = 3 \times 10^4$ m/sec

$r = 1.5 \times 10^{11}$ m

$m = 6 \times 10^{24}$ kg

Use $L = mv_o r$

16. Earth moves around the Sun and travels a distance of 9.42×10^8 km in 3.16×10^7 seconds. Orbital speed of Earth comes out to be:

(A) 3 m/sec (B) 3×10^4 m/sec
(C) 3×10^6 m/sec (D) None of these

Explanatory Answer (B)

$s = 2\pi r = 9.42 \times 10^8 \text{ km} = 9.42 \times 10^{11}$ m

$t = 3.16 \times 10^7$ sec

$v_o = \frac{s}{t} = \frac{2\pi r}{t} = \frac{9.42 \times 10^{11}}{3.16 \times 10^7} = 3 \times 10^4$ m/sec

17. Angular momentum (L) is related with kinetic energy of rotation (E) and moment of inertia (I) as:

(A) $E = \frac{L^2}{2I}$ (B) $L = \frac{E^2}{2I}$
(C) $I = \frac{E^2}{2L}$ (D) None of these

Explanatory Answer (A)

we know that

$(K.E.)_{rot} = E = \frac{1}{2} I\omega^2$

$= \frac{1}{2}\frac{I^2\omega^2}{I} = \frac{I^2}{2I}$

18. Kinetic energy of rotation (E) of a spinning ball is related to its angular momentum (L) as:

(A) $E = 2L\omega$ (B) $E = \frac{L\omega}{2}$
(C) $E = \frac{L}{2\omega}$ (D) None of these

Explanatory Answer (B)

$E = \frac{1}{2} I\omega^2 = \frac{1}{2}(I\omega)\,\omega = \frac{1}{2} L\omega.$

19. The SI unit of spring constant is identical with that of:

(A) Force
(B) Surface tension
(C) Pressure
(D) Loudness

Explanatory Answer: (B)

Surface tension = $\frac{\text{Force}}{\text{Length of line}}$ = N m^{-1}

20. π is the ratio of:
(A) Circumference of a circle to its diameter
(B) Diameter of a circle to its circumference
(C) Circumference of a circle to its radius
(D) None of these

Explanatory Answer: (A)

circumference = $2\pi r$

$\frac{\text{circumference}}{2r} = \pi$

$\frac{\text{circumference}}{\text{diameter}} = \pi$

21. **In SHM, there is always a constant ratio between displacement of a body and its:**
(A) Velocity
(B) Period
(C) Mass
(D) Acceleration

Explanatory Answer: (D)

Condition of SHM is $a \propto -x$

$a = -\text{constant} \times x$ or $\frac{a}{x} = -\text{constant}\ \pi$

22. **If a given spring of spring constant k is cut into two identical segments, the spring constant of each segment is:**
(A) $\frac{k}{2}$
(B) 2 k
(C) 4 k
(D) None of these

Explanatory Answer: (B)

When a spring is cut into half, the same weight will produce only half extension in it *i.e.*, $x' = \frac{x}{2}$

i.e., $k' = \frac{F}{x'} = \frac{F}{x/2} = \frac{2F}{x} = 2k$

23. **Distance covered during one vibration of an oscillating body in terms of amplitude A is:**
(A) A
(B) 2 A
(C) 3 A
(D) 4 A

Explanatory Answer: (D)

Since amplitude is the displacement from mean position to either side, hence in one vibration, distance covered is 4'.

24. **If a body completes 20 vibrations in one minute, its time period will be:**
(A) 0.05 sec
(B) 1.5 sec

(C) 3.0 sec
(D) 20 seconds

Explanatory Answer: (C)

20 vibrations in one minute means $\frac{20}{60}$ vibrations in one second. *i.e.*, $f = \frac{20}{60} = \frac{1}{3}$

$T = \frac{1}{f} = 3$ seconds

25. **The maximum velocity of a body performing SHM is v_o and maximum acceleration a_o. The amplitude of oscillation is:**
(A) $\frac{1}{v_o^2}$
(B) $\frac{v_o^2}{a_o}$
(C) $A_o v_o$
(D) $\frac{a_o^2}{v_o}$

Explanatory Answer: (B)

We know that $v_o = x_o\sqrt{\frac{k}{m}}$

$v_2 = x_o^2\frac{k}{m}$.........(1)

Since $a_o = x_o\frac{k}{m}$ or $\frac{k}{m} = \frac{a_o}{x_o}$

Hence equation (1) becomes

$v_o^2 = x_o^2\left(\frac{a_o}{x_o}\right) = x_o a_o$

or $x_o = \frac{v_o^2}{a_o}$

26. **Transverse wave motion is possible in:**
(A) Air
(B) A mixture of NH_3 and O_2
(C) Strings
(D) All of these

Explanatory Answer: (C)

Both types of waves can be set up in solids. In fluids (liquid and gas), however, transverse waves die out very quickly and usually cannot be produced at all. This is also the reason why sound waves in air are longitudinal in nature.

27. **The distance covered by sound waves in air at 0°C in the time of 0.1 seconds is:**
(A) 332 m
(B) 33.2 m
(C) 3.32 m
(D) 3320 m

Explanatory Answer: (B)

Since speed of sound = 332 m/sec at 0°C,
therefore $s = vt = 332 \times 0.1 = 33.2$ m

28. **The ratio of speed of sound in hydrogen to the speed of sound in oxygen is:**
(A) 4:1
(B) 1:4
(C) 8:1
(D) 1:8

Explanatory Answer: (A)

We should know that $v = \sqrt{\frac{rP}{\rho}}$

If ρ and P are same for two gases, then $v \propto \frac{1}{\sqrt{\rho}}$.

Since density of oxygen is 16 times that of hydrogen, hence speed of sound in hydrogen is 4 times its speed in oxygen.

29. One degree Celsius ______ in temperature produces approximately 0.61 m/sec ______ in the speed of sound.

(A) Fall, decrease (B) Rise, decrease
(C) Fall, increase (D) None of them

Explanatory Answer: (A)

In the formula $v_t = v_o + 61t$, the symbol t denotes change in temperature. Thus one degree rise in temperature will increase the velocity by 61 cm/sec and vice versa.

30. **For transmission of both transverse and longitudinal waves, we can use:**

(A) Solid (B) Gas
(C) Plasma (D) None of these

Explanatory Answer: (A)

Both types of waves can be set up in solids. In fluids (liquid and gas), however, transverse waves die out very quickly and usually cannot be produced at all. This is also the reason why sound waves in air are longitudinal in nature.

31. **Binomial expansion converts $\sqrt{1+\frac{t}{273}}$ into as follows:**

(A) $1+\frac{t}{546}$ (B) $1+\frac{2t}{273}$
(C) $2+\frac{t}{546}$ (D) None of these

Explanatory Answer: (A)

Binomial expansion of

$(1+x)^n = 1 + nx + \ldots\ldots\ldots\ldots$ (when x <<1)

Following this, we get

$$\sqrt{\left(1+\frac{t}{273}\right)} = \left(1+\frac{t}{273}\right)^{1/2}$$

$$= 1 + \frac{1}{2}\frac{t}{273} = 1 + \frac{t}{546}$$

32. **Through which medium sound waves travel faster?**

(A) CO_2 (B) H_2
(C) O_2 (D) He

Explanatory Answer: (B)

The same reasoning as in Q. 33 applies to this question. Since hydrogen is the lightest, hence speed of sound through hydrogen is the greatest.

33. **Two degree Celsius rise in temperature of the medium, produces approximately increase in the speed of sound equal to:**

(A) 0.61 cm/sec (B) 0.61 m/sec
(C) 1.22 m/sec (D) 0.61 mm/sec

Explanatory Answer: (C)

In the formula $v_t = v_o + 61t$, unit of "61" is cm/sec. Thus for rise in temperature, the increase in speed of sound is 61 cm/sec or 0.61 m/sec. Therefore for 2°C rise, the increase is 1.22 m/sec.

34. **Speed of sound in vacuum (in m/sec) is:**

(A) 330 (B) Zero
(C) 156 (D) 1000

Explanatory Answer: (B)

Since sound waves cannot travel through vacuum, hence we can say that their speed is zero in vacuum.

35. **Sound waves are:**

(A) Stationary waves (B) Transverse waves
(C) Longitudinal waves (D) None of these

Explanatory Answer: (C)

For explanation, see answer to Q. 33.

36. **At what temperature, the speed of sound in air is double its value at 0°C:**

(A) 1090°C (B) 819°C
(C) 546°C (D) 273°C

Explanatory Answer: (B)

use $\frac{v_t}{v_o} = \sqrt{\frac{T}{T_o}}$

i.e., $\frac{2v_o}{v_o} = \sqrt{\frac{T}{273}}$

$\frac{T}{273} = 4$ or $T = 1092\ k = 819°C$

37. **The speed of sound in air at 4 atmospheres and that at 1 atmosphere pressure will be:**

(A) 1:4 (B) 4:1
(C) 1:1 (D) 3:1

Explanatory Answer: (C)

Since speed of speed is not affected by change of pressure, hence is the answer.

38. **If the difference between frequencies of the tuning forks is n, then number of beats produced in two seconds are:**

(A) n (B) 2n
(C) 3n (D) 4n

Explanatory Answer: (B)

The rule is that if difference between frequencies of the tuning forks is n, then n number of beats will be produced in one second. Thus for 2 seconds, answer will be 2n.

39. **Two identical tuning forks vibrate at 256 c/sec. After loading one of them, 6 beats /sec are heard when forks are sounded together. The period of the loaded fork is:**

(A) 2×10^{-3} sec (B) 3×10^{-3} sec
(C) 4×10^{-3} sec (D) 0.006 sec

Explanatory Answer: (C)

$f_1 = 256$ c/sec, $f_2 = 256 \pm 6 = 262, 250$ c/sec

∴ According to the options, $f_2 = 250$ is correct because then

$T_2 = \frac{1}{f_2} = \frac{1}{250} = 0.004$

$= 4 \times 10^{-3}$ seconds

40. If $\lambda = 400$ nm, its value in angstrom unit ($=10^{-10}$ m) is given as:

(A) 4×10^3 (B) 4×10^{-17}
(C) 4×10^{17} (D) 4×10^{-3}

Explanatory Answer: (A)

Given $\lambda = 400\text{ nm} = 4 \times 10^2 \times 10^{-9}\text{ m} = 4 \times 10^{-7}\text{ m}$
Since $1\text{ A}° = 10^{-10}$ m or $1\text{ m} = 10^{10}\text{ A}°$
Hence $\lambda = 4 \times 10^{-7} \times 10^{10}\text{ A}° = 4 \times 10^3\text{ A}°$

41. The path difference and phase difference are related to each other as:

(A) Phase difference $= 2\pi \times$ path difference
(B) Phase difference $= \frac{2\pi}{\lambda} \times$ path difference
(C) Phase difference $= \frac{\lambda}{2\pi} \times$ path difference
(D) Phase difference $= \frac{2\lambda}{\pi} \times$ path difference

Explanatory Answer: (B)

Phase difference $= \frac{2\pi}{\lambda}$ (path difference)

If path difference $= \lambda$,

Then phase difference $= \frac{2\pi}{\lambda}\lambda = 2\pi$

Thus λ corresponds to 2π (Rule)

42. Phase change of 180° is equivalent to a path difference of:

(A) 2λ (B) λ
(C) $\lambda/2$ (D) $\lambda/4$

Explanatory Answer: (C)

Phase change of 360° (full circle) means full wavelength λ
Therefore 180° corresponds to $\lambda/2$.

43. In case of YDS experiment, the distance between adjacent bright fringes is given by:

(A) $\Delta y = \frac{\lambda L}{d}$ (B) $\Delta y = \frac{L}{\lambda d}$
(C) $\Delta y = \frac{d}{\lambda L}$ (D) None of these

Explanatory Answer: (A)

Note that the distance between adjacent bright fringes is called fringe spacing *i.e.,* space between two bright fringes and this space is dark fringe and has the same width as that of one bright fringe itself.

Similarly, space between two dark fringes is a bright and has the same width as that of one dark fringe itself.

44. In case of YDS experiment, the fringe spacing varies _______ with slit separation d and varies _______ with distance L between slits and screen.

(A) Directly, directly (B) Inversely, inversely
(C) Inversely, directly (D) Directly, inversely

Explanatory Answer: (C)

We know that fringe spacing $= \frac{\lambda L}{d}$ and the answer is evident.

45. The fringe width in YDS experiment can be increased by decreasing:

(A) Width of slits (B) Wavelength of light
(C) Slits separation (D) Distance between slits and screen

Explanatory Answer: (C)

Fringe width and fringe spacing are the same thing and represented by Δy.

The answer is clear from the formula $\Delta y = \frac{\lambda L}{d}$.

46. If the slits in YDS experiment are made closer, fringe spacing will:

(A) Increase (B) Decrease
(C) Remain same (D) None of above

Explanatory Answer: (A)

By making the slits closer, means to decrease 'd'. Then from the formula $\Delta y = \frac{\lambda L}{d}$. it is the clear that fringe spacing will increase.

47. Fringe spacing in YDS experiment will be maximum if we use:

(A) Red light (B) Green light
(C) Violet light (D) Blue light

Explanatory Answer: (A)

Red light has greater wavelength as compared to those of all visible colours and thus $\Delta y = \frac{\lambda L}{d}$ tells that fringe spacing will be maximum.

48. In YDS experiment, data given is $\lambda = 500$ nm, $d = 1$ mm, $L = 100$ cm, Δy comes out to be:

(A) 0.5 cm (B) 0.5 mm
(C) 0.5 nm (D) 0.5 m

Explanatory Answer: (B)

Given $\lambda = 500\text{ nm} = 500 \times 10^{-9}$ m

49. In Micchelson's Interferometer, a bright fringe will be replaced by next bright fringe if we move the movable mirror by an amount equal to:

(A) λ (B) $\lambda/2$
(C) $\lambda/4$ (D) None of these

Explanatory Answer: (B)

If the movable mirror is moved by an amount equal to $\lambda/2$, the path travelled by the ray is λ. Thus if we have bright fringe in front of us, then again, there will be next bright fringe according to condition of constructive interference.

50. In Michelson's interferometer, the plates are placed in front of incident ray at an angle

of:

(A) 45° (B) 60°
(C) 90° (D) 120°

Explanatory Answer: (A)

Angle of 45° is must because reflected ray must be perpendicular to incident ray so as to fall on movable mirror.

51. In Michelson's Interferometer, the movable mirror is moved by 0.5000 mm and shift of 200 fringes is observed, the wavelength for light used is:

(A) 5×10^{-7} m (B) 5×10^{-4} m
(C) 5×10^{-6} m (D) None of above

Explanatory Answer: (C)

We shall use the formula $L = m\,\lambda/2$

or $\lambda = \frac{2L}{m}$

Given $L = 0.5$ mm $= 0.5 \times 10^{-3}$ m

$m = 200$ fringe

$\lambda = \frac{2L}{m} = \frac{2 \times 0.5 \times 10^{-3}}{200} = 0.5 \times 10^{-3} \times 10^{-2}$ m

$= 5 \times 10^{-1-3-2}$ m

$= 5 \times 10^{-6}$ m

52. In the theory of dimensional analysis, heat may be properly represented by:

(A) ML^2T^{-2} (B) MT^{-2}
(C) $ML^{-1}T^{-1}$ (D) None of these

Explanatory Answer: (A)

Heat is a form of energy and thus it has dimensions of energy or work.

Work = Fd = kg m sec^{-2} × m = kg m^2 sec^{-2}

$= [ML^2T^{-2}]$

53. In an ideal gas, the molecules have:

(A) Kinetic energy only (B) Potential energy only
(C) Both KE and PE (D) None of these

Explanatory Answer: (A)

This is assumption of kinetic theory that molecules of an ideal gas do not exert force on each other. Thus they have no potential energy.

54. At constant temperature, if the density of the gas is increased, its pressure will:

(A) Decrease (B) Increase
(C) Remains unchanged (D) None of these

Explanatory Answer: (B)

Increasing the density means increasing number of molecules per unit volume and thus pressure exerted on the walls of the vessel will increase.

55. The nature of thermal radiation is similar to:

(A) Ultraviolet rays (B) Light rays
(C) Both of them (D) None of them

Explanatory Answer: (C)

Thermal radiations, ultraviolet rays and light rays are all members of electromagnetic wave spectrum.

56. Pressure may be defined as ________ per second per unit area.

(A) Change in force (B) Change in momentum
(C) Change in energy (D) Work done

Explanatory Answer: (B)

$\text{Pressure} = \frac{\text{Force}}{\text{area}} = \frac{\text{Change of momentum}}{\text{time} \times \text{area}}$

57. If a molecule with momentum mv strikes a wall and rebound then the change in momentum will be:

(A) –2 mv (B) Zero
(C) 2 mv (D) mv

Explanatory Answer: (A)

initial momentum = mv

final momentum = –mv

change in momentum = Final value – initial value

= (–mv) – (mv) = –2mv

58. If N denotes the total number of molecules in a cubic vessel such that m is mass of each molecule and l is length of each side of vessel, then $\frac{mN}{l^3}$ gives the:

(A) Force (B) Density
(C) Work done (D) Pressure

Explanatory Answer: (B)

mN is equal to total mass of all the molecules in the vessel and ℓ^3 is volume of vessel. Thus $\frac{mN}{\ell^3}$ decides the density of gas in the vessel.

59. Tick the correct pair when M denotes molecular mass and other symbols carry usual meanings:

(A) $N = nN_A$, $m = MN_A$ (B) $n = N\,N_A$, $M = mN_A$
(C) $M = \frac{N_A}{N}$, $N_A = \frac{m}{M}$ (D) $N = nN_A$, $M = mN_A$

Explanatory Answer: (D)

Note that n denotes number of moles

m = mass of a molecule

M = molecular mass = mass of one mole of a gas

N_A = Avogadro number

= number of molecules in one mole

Thus $nN_A = N$ and $m = \frac{M}{N_A}$

60. Average KE of a gas molecule has:

(A) Direct relation with absolute temperature and inverse relation with pressure
(B) Direct relation with both absolute temperature and pressure
(C) Inverse relation with both
(D) None of these

absolute temperature and pressure

Explanatory Answer: (B)

We should know that $P = \frac{2}{3} N_o <\frac{1}{2} mv^2>$

$T = \frac{2}{3k} <\frac{1}{2} mv^2>$

61. **When a gas is compressed:**
(A) Its internal energy decreases
(B) Its temperature decreases
(C) Its temperature increases
(D) None of these

Explanatory Answer: (C)

Compression of a gas raises its temperature and expansion of gas lowers its temperature.

62. **In an isothermal process, the internal energy of the system:**
(A) Increases
(B) Decreases
(C) Remains constant
(D) None of these

Explanatory Answer: (C)

In an isothermal process, temperature remains constant and hence internal energy also remains constant.

63. **Tick which of the following is not a state variable?**
(A) Heat energy
(B) Pressure
(C) Entropy
(D) Volume

Explanatory Answer: (A)

Heat energy is the energy in transit and cannot be measured unless its transfer is complete. Hence heat energy is not a state variable.

64. **If P is the pressure and V is the volume, then PV will represent:**
(A) Power
(B) Work
(C) Force
(D) None of these

Explanatory Answer: (B)

Let us build up unit of PV

i.e., $\frac{Force}{Area} \times volume = N\,m^{-2} \times m^3 = Nm = Joule$ *i.e.,* work

65. **If A is the area and Δy is the distance moved by the piston, then AΔy will represent:**
(A) Change in pressure
(B) Density
(C) Change in volume
(D) None of them

Explanatory Answer: (C)

Let us build up unit of AΔy

i.e., $m^2 \times m = m^3$ *i.e.,* change in volume

66. **Given that $P = 10^4\ N/m^2$, Area of the piston = 0.1 m^2 and distance moved by the piston = 10^{-1} cm, then the work done by the gas is:**
(A) 1 J
(B) 10^5 J
(C) 10^4 J
(D) 10 J

Explanatory Answer: (A)

Use work = p A Δy = $10^4 \times 0.1 \times (10^{-3}$ meters) = 1 Joule

67. **Suppose volume of gas in a cylinder is 3 c.c. If the piston is kept fixed and gas is heated from 5°C to 12°C, then the work done is:**
(A) 2.3 J
(B) 21 J
(C) Zero
(D) None of these

Explanatory Answer: (C)

Since piston is fixed, no work will be done.
Since $C_v \Delta T = \Delta U$, hence $C_v \Delta T$ represents energy.

68. **If the temperature difference between hot and cold body is greater, the heat engine is:**
(A) Not efficient
(B) Less efficient
(C) More efficient
(D) None of above

Explanatory Answer: (C)

For heat engine $\eta = 1 - \frac{T_2}{T_1} = \frac{T_1 - T_2}{T_1}$

i.e., $\eta \propto (T_1 - T_2)$, hence the answer.

69. **As the working substance of a heat engine completes a cycle, there is no change in:**
(A) Internal energy
(B) Pressure
(C) Volume
(D) None of these
(E) All of these

Explanatory Answer: (E)

When a cycle is complete, state variables like volume, temperature and pressure attain their initial values.

70. **What will be efficiency of a carnot engine when it is operated between the temperatures 47°C and 127°C:**
(A) 20%
(B) 50%
(C) 60%
(D) 75%

Explanatory Answer: (A)

$T_1 = 127°C + 273 = 400$ K,
$T_2 = 47°C + 273 = 320$ K

Now use $\eta = \left(1 - \frac{T_1}{T_2}\right) \times 100$

71. **If temperature of the sink is decreased, efficiency of a carnot engine:**
(A) Remains constant
(B) Decreases
(C) Increases
(D) None of these

Explanatory Answer: (C)

$\eta = 1 - \frac{T_2}{T_1} = \frac{T_1 - T_2}{T_1}$

When temperature of sink is decreased, temperature difference increases and efficiency of Carnot engine increases.

72. **A certain engine converts 20% of available heat energy into work. Then its efficiency will be:**
(A) 20%
(B) 80%
(C) 50%
(D) None of these

Explanatory Answer: (A)

Efficiency means how many percent a heat engine is efficient of converting the available heat energy into work. Hence the answer.

73. No entropy change is associated with:
(A) Isothermal process (B) Adiabatic process
(C) Isobaric process (D) None of them

Explanatory Answer: (B)

Entropy change $\Delta S = \frac{\Delta Q}{T}$

Since in adiabatic process, $\Delta Q = 0$, hence the answer.

74. Net change in entropy of a system in a Carnot cycle is:
(A) Positive (B) Negative
(C) Zero (D) None of these

Explanatory Answer: (C)

We know that when Carnot cycle is complete, the net change in internal energy is zero. Hence net change in entropy is also zero.

75. When the temperatures of source and sink of a heat engine become equal, the change in entropy will be:
(A) Zero (B) Minimum
(C) Maximum (D) None of these

Explanatory Answer: (C)

When $T_1 = T_2$, then $\eta = \frac{T_1 - T_2}{T_1}$ = zero

Thus change in entropy is maximum.

76. Two charges q_1 and q_2 are placed in vacuum at distance d and force between them is F. If a medium of relative permittivity is introduced between them then new force will be:
(A) $\frac{F}{4}$ (B) $\frac{F}{2}$
(C) 2F (D) 4F

Explanatory Answer: (A)

$F_{med} = \frac{F_{vac}}{\epsilon r} = \frac{F}{4}$

77. A charge Q is divided into two parts q1 and q2. The maximum coulomb repulsion between the two parts is obtained when ratio $\frac{q_1}{q_2}$ is:
(A) 1 (B) $\frac{1}{2}$
(C) $\frac{1}{4}$ (D) $\frac{2}{3}$

Explanatory Answer: (A)

78. A metallic ball having charge 10^{-8}C moves from a point A at potential 600V to a point B at zero potential. Which of the following is the change in its K.E?
(A) 6×10^{-6} erg (B) 6×10^{-6} J
(C) 6×10^{6} J (D) -6×10^{6} J

Explanatory Answer: (B)

$\Delta V = 600 - 0 = 600V$

$q = 10^{-8}C$

$\Delta K.E = q\Delta V = 10^{-8} \times 600$

$\Delta K.E = 6 \times 10^{-6}$ J

79. Electric field and electric potential inside hollow charged conducting sphere are respectively:
(A) Zero, non zero (B) Non nero, zero
(C) $0, \frac{1}{4\pi\epsilon_0}\frac{q}{r^2}$ (D) $\frac{1}{4\pi\epsilon_0}\frac{q}{r^2}, \frac{1}{4\pi\epsilon_0}\frac{q}{r}$

Explanatory Answer: (A)

80. Two point charges are +2C and +6C repel each other with a force of 12N. If a charge of –4C is given to each of these charges, the force now is:
(A) Zero (B) 4N repulsion
(C) 4N attractive (D) 12N attractive

Explanatory Answer: (C)

New charges

$q_1 = -2C$ & $q_2 = 2C$

$F \alpha q_1q_2$

$F = 4N$

As q_1q_2 are opposite charges therefore force is attractive.

81. Two copper spheres of same radii one hollow and other solid are charged to the same potential then:
(A) Both will hold same charge (B) Solid will hold more charge
(C) Hollow will hold more charge (D) Hollow cannot be charged

Explanatory Answer: (A)

82. The magnitude of an electric field E, such that an electron placed in it would experience an electric force equal to its weight, is given by:
(A) Mge (B) $\frac{e}{mg}$
(C) $\frac{me}{g}$ (D) $\frac{mg}{e}$

Explanatory Answer: (D)

$F_e = w$

$eE = mg$

$E = \frac{mg}{e}$

83. When 10^{14} electrons are removed from a neutral metal sphere then which of the following is the charge on sphere?

(A) 16μC (B) −16μC

(C) 32μC (D) −32μC

Explanatory Answer: (A)

$n = 10^{14}$

$q = ne$

$q = 10^{14} \times 1.6 \times 10^{-19}$

$q = 16 \times 10^{-6}C = 16\mu C$

85. Which of the following is not the energy stored between the plates of condenser?

(A) $U = \frac{CV^2}{2}$ (B) $U = 2qV$

(C) $U = \frac{q^2}{2C}$ (D) $U = \frac{qV}{2}$

Explanatory Answer: (B)

As $U = \frac{1}{2}qv = \frac{1}{2}CV^2 = \frac{1}{2}\frac{Q^2}{C}$

Therefore 2qv is not the energy stored in capacitor

86. Which material sheet should be placed between the plates of parallel plate capacitor in order to increase its capacitance?

(A) Mica (B) Copper

(C) Tin (D) Iron

Explanatory Answer: (A)

87. A capacitor is charged to store energy U. The charging battery is disconnected. An identical capacitor is now connected in parallel to the first capacitor. The energy in each capacitor is:

(A) $\frac{3U}{2}$ (B) U

(C) $\frac{U}{2}$ (D) $\frac{U}{4}$

Explanatory Answer: (D)

As $U = \frac{Q^2}{2C}$

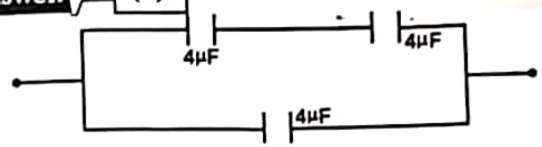
When charge reduces half then from above eq energy reduces one forth

88. Three capacitors of 4μF each are to be connected in such a way that the net capacitance is 6μF. Then

(A) All the three be in series (B) All the three be in parallel

(C) Connect two in series and one in parallel (D) Connect two in parallel and one in series

Explanatory Answer: (C)



89. When air is replaced by a dielectric medium of relative permittivity $\in_r$, the maximum capacity of the condenser_______.

(A) Decreases $\in_r$ times (B) Increases $\in_r$ times

(C) Increases $\in_r^2$ times (D) Remains unchanged

Explanatory Answer: (B)

$C_{med} = C_{vac} \in r$

90. If a charged capacitor is connected to earth, its charge:

(A) Decreases (B) Increases

(C) Remain same (D) none of above

Explanatory Answer: (A)

16. Time constant of fig (a). is t. which of the following is time constant of fig (b).

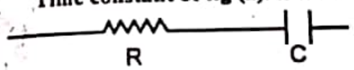


Fig.(A)

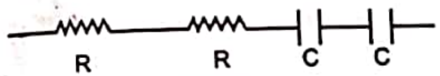


Fig.(B)

(A) 4t (B) 2t

(C) t (D) $\frac{t}{2}$

Explanatory Answer: (C)

in fig (b)

$R_{eq} = 2R$

$C_{eq} = \frac{C}{2}$

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$$R_{eq} \times C_{eq} = 2R\left(\frac{C}{2}\right)$$
$= RC$
$= t$

91. If a metal plate is placed between two point charges then electrostatic force between them:
(A) remains constant
(B) increases
(C) decreases
(D) becomes zero

Explanatory Answer: (D)

$$F_{med} = \frac{F}{\epsilon_r}$$
For metal $\epsilon_r = \alpha$
$$F_{med} = \frac{F}{\alpha} = 0$$

92. An alpha particle is accelerated through potential difference of 10^6V. Which of the following is its K.E?
(A) 1MeV
(B) 2MeV
(C) 4MeV
(D) 8MeV

Explanatory Answer: (B)

$K.E = q\Delta v$
$q = 2e = 2 \times 1.6 \times 10^{-19}C$
$\Delta V = 10^6 V$
$K.E = 2 \times 1.6 \times 10^{-19} \times 10^6 J$
$$K.E = \frac{2 \times 1.6 \times 10^{-19} \times 10^6}{1.6 \times 10^{-19}} ev$$
$K.E = 2 \times 10^6 ev$
$K.E = 2Mev$

93. A parallel plate capacitor with oil between the plate ($\epsilon r, = 2$) has a capacitance "C". If oil is removed then capacitance of capacitor becomes:
(A) C
(B) $\frac{C}{2}$
(C) $\frac{C}{\sqrt{2}}$
(D) $\sqrt{2C}$

Explanatory Answer: (B)

$$Cvac = \frac{C_{med}}{\epsilon_r}$$

94. A parallel plate capacitor is first charged and then a dielectric slab is introduced

between the plates. Which of the following quantity remains unchanged?
(A) Energy
(B) Capacity
(C) Potential
(D) Charge

Explanatory Answer: (D)

95. A 1 μF capacitor is subjected to 4000V, potential difference the energy stored in capacitor is:
(A) 8J
(B) 16J
(C) 4×10^{-3}J
(D) 12×10^{-3}J

Explanatory Answer: (A)

$$U = \frac{1}{2}CV^2$$
$C = 1\mu F = 1 \times 10^{-6}F$
$V = 4000V$
$$U = \frac{1}{2} \times 1 \times 10^{-6} (4 \times 10^3)^2$$
$$U = \frac{16 \times 10^{-6} \times 10^6}{2}$$
$U = 8J$

96. A charge Q is enclosed in a dielectric of strength K, the maximum number of electric lines of force is:
(A) zero
(B) $\frac{Q}{\epsilon_o}$
(C) $\frac{Q}{K\epsilon_o}$
(D) Infinite

Explanatory Answer: (C)

97. 4×10^{20} eV energy is required to move a charge of 0.25 C from A to B, the potential difference between A and B is:
(A) 178 V
(B) 256 V
(C) 356 V
(D) 400 V

Explanatory Answer: (B)

$W = 4 \times 10^{20} ev$
$W = 4 \times 10^{20} \times 1.6 \times 10–19J$
$q = 0.25C$
$$\Delta V = \frac{w}{q} =$$

$$\frac{4\times10^{20}\times1.6\times10^{-19}}{0.25}$$

$\Delta V = 256V$

98. When electron is brought near a –vely charged plate then its electrical P.E.:

(A) Increases (B) decreases
(C) remains same (D) becomes zero

Explanatory Answer: (A)

99. A wire of resistance R is stretched four times of its length uniformly. Its new resistance will be:

(A) 16R (B) 4R
(C) $\frac{R}{4}$ (D) $\frac{R}{16}$

Explanatory Answer: (A)

New length = $\ell' = 4\ell$

New area $A' = \frac{A}{4}$

Initial resistance

$$R = \rho\frac{L}{A}$$

New resistance

$$R' = \rho\frac{L'}{A'}$$

$$R' = \frac{\rho(4\ell)}{\frac{A}{2}}$$

$$R' = 16\left(\ell\frac{L}{A}\right)$$

$R' = 16R$

100. A car battery has emf 12V and internal resistance $5\times10^{-2}\Omega$. If it draws 60 A current, the terminal voltage of battery will be:

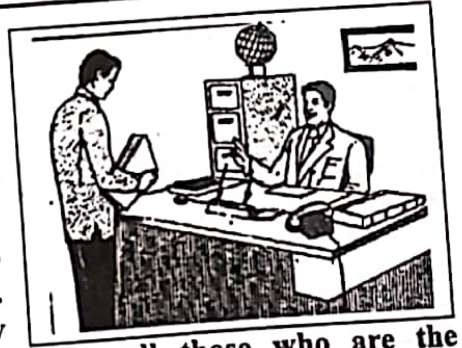
(A) 3V (B) 5V
(C) 9V (D) 12V

Explanatory Answer: (C)

$V_t = \in - Ir$

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Interview & Viva Voce



Though the world interview is used only in the case of formal 'interviews' conducted for purposes of official selection of candidates. It has much wider meaning. Basically, an interview involves a situation where at least two persons get together to solve a problem. Here 'problem' is meant to convey any proposition which is of common interest to all those who are the participants in the interview. It is not wrong to say that almost all of our social life is a series of interviews.

INTRODUCTION

Interview is a conversation with a purpose. It involves the selector and the candidate. No doubt, caliber and suitability of the candidate are very important, but equally important is an interview.

Interview is really face-to-face situation. A complete knowledge and plus points of candidates are of paramount importance. A candidate must reveal his very best and most accurate aspects. A candidate, while being interviewed must (a) not lose temper (b) be polite (c) not be arrogant.

He must tell interviewing officer about his qualification, experience and other particulars in a lucid, concise, confident and precise manner. The way a candidate presents himself goes a long way to impress the interviewer.

Pre-interview preparation is the key to a good interview. Nervousness often leads to poor performance.

It must be remembered that "being good at interview is a skill, which is quite separate from work-skill". Be prepared and be positive about yourself.

The candidate will be interviewed by a Board who will have before them a record of his career. He will be asked questions on matters of general interest. The object of the interview is to assess the personal suitability of the candidate for the services or service for which he has applied by a Board of competent and unbiased observers. The test is intended to judge the mental caliber of a candidate. In broad terms, this is really an assessment of not only his intellectual qualities but also social

traits and his interest in current affairs. Some of the qualities to be judged are mental alertness, critical power of assimilation, clear and logical exposition, balance of judgement, variety and depth of interest, ability for social cohesion and leadership, intellectual and moral integrity.

The technique of the interview is not that of strict cross examination but of a natural through directed and purposive conversation which is intended to reveal the mental qualities of the candidate.

The personality test is not intended to be a test either of the specialized or general knowledge of the candidate which have been already tested through his written papers. Candidates are expected to have taken an intelligent interest not only in their special subject of academic study but also in the events which are happening around them both within and without their own state or country, as well as in modern currents of thought, and in new discoveries which should rouse the curiosity of well-educated youth.

This serves as an example of the viewpoint of the giver. The giver will always have as clear a picture in his mind of the requirements of the situation as possible. He would have a mental picture of the type of person he thinks would suit his purpose. Therefore, here is a moral of the interviewees.

What Is An Interview?

A successful interview means a bright career. It has become an integral part of almost all competitive examinations. Interview is more revealing and important than written test. It depicts candidate's power of expression, initiative, drive, tact, alertness and self-confidence. Interviewer judges through interview as to whether the candidate has the quality of critical appreciation, clear and logical exposition, balanced judgement, ability for social cohesion, leadership qualities, moral integrity and social adaptability. "An interview can make or mar your career."

If, on the other hand, a prospective candidate is satisfied with his 'self-interview' it would give him poise and confidence when the actual interview takes place. He would be sure of himself and his suitability. He would have developed a sense of ego which is greatly valued by all the interviewers.

It may be thought it would amount to 'building castles in the air'. Well, there is no harm in building castles in the air, only if foundations are provided under them.

PREPARATION FOR INTERVIEWS

The ideal way for preparation for an interview to be conducted by the ISSB should be systematic and regular. It should begin at the same time as the ordinary studies connected with the written papers. The candidate should set aside one hour

for special training, once a week, on an average, for at least one year prior to appearing in a competitive examination.

Preparing for an interview is like preparing for a rough and tough expedition. A *viva voce* test may sometimes prove to be a typhoon. The candidate has got to be prepared for the worst if he wants to come out successful. A candidate requires much skill and energy and there exists a huge store of energy within himself waiting to be tapped if he has only the necessary will and determination. Allah has endowed every human being with capacities of thought and action. But these are useless as a machine deprived of its motion power unless they are nursed and properly exercised. Human qualities are like tender plants, feed them and they will grow, starve them and they will wither, and consequently die. A candidate should bring his suppressed store of energy to the surface and apply it to the full. By unlocking one store of energy, he will be able to quickly unlock another. Thus, the candidate's mental outlook will become frank and optimistic instead of pessimistic and suppressed.

The interviews should develop in himself the following qualities:

Healthy appearance helps a great deal. A person with a shattered health cannot impress others. Artificial make-up or fashionable dress cannot compensate for poor general appearance. A person must try his level best to make himself healthy.

Smartness is another important feature which an interviewee has to take into account. A smart person impresses a lot. Even if a person is not very brilliant, he can well make a good first impression with his smartness, and the first impression counts great deal at short interviews. Shoulders shall be well squared, arms at ease, in a natural position on the lap, and knees together, but not crossed, the eyes should neither develop a stare nor the inquisitiveness, the candidate while entering or leaving the room should walk with natural ease and forsake all kinds of clumsiness. The candidate's hearing should be alertly attentive. He should avoid saying *beg your pardon*. The candidate should equally guard against himself against being over-smart.

Mental culture is equally important. A person with some inherent physical limitations can make a good impression by his mental alertness and his intellectual brilliance. Intelligence is developed with real and useful knowledge. A person must know the basic principles of science, economics, history, geography, sociology and civics, etc. In order to develop his knowledge, a candidate must read newspapers, monthlies and other important books. Travelling also helps a lot in this connection.

Dress is another important factor which helps the interviewee. A well-dressed person has an initial advantage over the ill-dressed one. The candidate must avoid to use a brand new costly suit, especially got prepared for the interview. In quite a similar manner, the candidate must avoid wearing a brand new pair of shoes and must use well-polished shoes. Brand new dresses place a person in a little

uncomfortable position. It would be unwise for a candidate to suit himself in dress with which he is not familiar.

A candidate must develop a social personality. He should attend public lectures, public debates, etc. He should try to be a good conversationalist as well as a master orater.

Self-confidence: An interviewee should have self-confidence. Nervousness, palpitation and perspiration are signs of lack of self-confidence. Inferiority complex and lack of confidence are usually results of ignorance and weakness in knowledge. A candidate with a strong body, a sound mind, with a vast reading and a wide experience will seldom fear. He will be able to face the members of the board as if they are his equal.

Shake off fear: Many a candidates have failed to get into service simply because they could not come up to the mark in the *viva voce* test. The main cause of their failure has always been the fear of the Interview Board. It should be remembered well that "prosperity cannot be built on fear". A candidate should have courage, and above all, self-confidence to face the whole situation in a jovial manner.

You may know the job of skating off on a cold day. You may know the delight of a fine meal after a long walk. These are real and wholesome but all such things put together cannot approach the thrill of ridding yourself of fear. The conquest of fear is one continuous, grand and glorious feeling. It is equally easy and equally dangerous — to become a martyr to one's own fear. Rather, it must be shaken off. Have courage, cheerfulness and self-confidence in you and success is sure and your.

TACTICS OF APPEARING AT INTERVIEWS

Broadly speaking, an interview is nothing more than a mere conversation. It is a two-way traffic in which the interviewer tries to discover whether a student or a candidate has the ability to a particular job. The interviewer does not have much time at his disposal, and hence, he attempts to have a fair estimate of the personality, attitude and knowledge of the candidate in a summary manner. Therefore, quickness and tranquil confidence are of essential importance for the interviewees. It is quite possible to be rapid without being hasty and to be cool and composed without being slow.

There is no doubt in the fact that knowledge of the subject or subjects regarding which the interviewer may question the candidate is quite essential. But it should be considered that an interview is not merely an examination of the amount of information that a candidate possess. More often, the academic knowledge of a candidate is estimated in written examinations. Usually, interviews are conducted to

supplement and complement and not supplant a written examination. The interview, ordinarily, follows the written examination. The written examination is the first stage in which the less knowledgeable candidates are weeded out. The interviewer tries to finding out the extent and intensity of the candidate's command over the subjects, the traits of his personality and the main features of his attitude.

Therefore, a candidate must demonstrate to the interviewer, the better aspects of his personality. He should have appreciable command over his subjects, but at the same time he must be in a position to face others in a confident, courteous and relaxed manner.

The art of relaxation: To relax is not a difficult thing. Dale Carnegie, the popular American author, has offered a reasonable enough formula to offer for the art of relaxation. He says that nothing succeeds better in taking out the element of fear and stiffness from the eminent members of the Interview Board as imagining them in formal conditions. He suggests that, a candidate to do well in an interview should not regard the examiners as superior men, or extraordinary and majestic men but simply as men. Relaxation would make a candidate feel at home with the others. The candidate then considers his examiners or interviewers as friends and not enemies. It may also be noted here that the same tactics are found to be very helpful in case of public speaking. The speaker should not be afraid of his audience, he should not consider that his audience are superior to him or even equal to him. On the contrary, he must consider the members of the audience as somewhat inferior to him in intelligence and knowledge. So to say, he must have confidence and dynamism.

The art of saying "no": A candidate must never attempt bluffing the interviewer, or the examiners. He should know that it is always better to say "no" when he does not know the correct answer to a question. He must not beat about the bush. On the contrary, he must be straightforward and frank in such circumstances. In a courteous and polite manner, he must say, "sorry sir, I do not know the answer to the question". The candidate is quite familiar with the fact that at present knowledge has become very vast. This fact is also known to the interviewers. That is why they do not really expect, a candidate to answer all the questions correctly. Hence, when a candidate once, twice or thrice admits ignorance in a pleasing, unashamed but not audacious manner, they do not feel either annoyed or disappointed.

The art of taking a cue: It is evident that the tendency to say "no" should not be carried to an extreme. If a candidate does not know most of what he is expected to know and he keeps on saying "no" to eighty per cent of the questions put on him, he cannot be helped. In that case, he is ill-equipped. He should acquire more knowledge and should make better preparations for his interviews. But in other cases when a

candidate possesses good idea about the subject-matter and is stuck only on a minor point or fails to remember what he knows on account of the tension the best thing to do is to have confidence in himself and endeavour to search for the "cue" which one member or more of the Interview Board may and do often supply. It is fortunate, in these days, that interviewees are helped a bit by their interviewers. In this way, the interviewers try to discover what a candidate knows. This help should be welcome and the intelligent candidate should utilise the lead given by any of the interviewers.

Why to lead the interviewee: Interviewers or examiners may often guide a candidate to the correct answer. In a similar way, an intelligent candidate or an interviewee can lead the interviewer to grounds which he considers familiar. In most of the interviews for higher jobs in the Civil or Army Service, the interviewers do like to be led in this manner. They attempt to bring out, not the weak but the strong points of the interviewee. Therefore, the interviewee must be skilful to steer the interviewers to the things and subjects he has good knowledge of. An instance will clear this point. A candidate who has specialised in sociology may be required to speak about the conquest of Sindh by Muhammad Bin Qasim. The good thing for a candidate would be to say as much as he knows about the conquest, but at the same time, he should volunteer that he would be pleased to tell something about the cultural and social results of the conquest. More often than not, this offer would be accepted by the interviewers who would make their subsequent questions, in view of the special knowledge and interest of the candidate.

The use of humour: Sometimes, the interviewers attempt to help the candidate in making a joke or two. They do so in order to make the atmosphere easy. In this manner, they measure the wit and sense of humour that the candidate may have. A candidate must avail opportunity for such occasions. He should laugh with the interviewers to appreciate their joke and also considering the occasion by offering one or two of his own. It may be relevant.

The bane of artificiality: A candidate should not try to be artificial. There can be no better image of one's self than the natural one. The candidate must speak, converse and behave in the way he is used to do. Self-consciousness is the main foe of good performance in interview. Everyone of us suffers from one difficulty or another. No man is perfect, no man can be. Allah has given His men different capacities. Some are adept at public speaking, some excel in table-talk. Some have good accents while others may not be fortunate in that regard. Some have good language, others have to do with average. It is a good thing for a candidate that he should be aware of his weaknesses and try to ratify these beforehand. But if these are of such nature that they cannot be corrected during the time of preparation, then it is better not to try to hide them, when the interview is in progress. Nothing can be corrected on this stage.

It is preferable to speak in one's own language, however, lacklustre it may be, than in borrowed or memorized high flown language which may open at the seams under the slight unforeseen pressure. Artificiality must be avoided at any cost. It would be often seen that men who are apparently not so "smart" do better in interviews than those who appear ordinarily to be of the "get-set brand". The reason for that is that ostensibly "unsmart" candidates are natural in their communication with others while those of the other type are not. This point can be understood better by referring to our own experience and impression of men we meet. It is in our experience that we promptly like the man who does not put on airs, a simple man who has clear habits, does not look shabby, is not dominating but assertive, clear and brief in his expression, friendly and well-meaning in his behaviour towards others. Above all, he is all sincere and without affectation. On the other hand, as soon as we learn the slightest trace of insincerity and uncalled for artificiality in a man, however, polished and well-informed, we cannot help but feel a bit angry with him and however objective our measurement, it cannot but suffer from a bias, even if unconscious, against him.

The need to be polite: Courtesy is a very valuable thing in interviews. It costs nothing but pays much. However, well-informed, polished and smart one may be one who may end up with a totally negative impression on the minds of others if one even appears to be rude, impolite and discourteous. Even if a candidate has to emphasis his point of view, he must do it in quite a soft way. In such cases, a good interviewee or examinee would choose some expression or phrase polite, yet forceful enough to articulate difference of opinion or information. It is always good to say something like, "I am afraid Sir that the viewpoint put forward is outdated and has been proved to be based on mistaken information .... or "If you permit me to point out, Sir, while what you say is correct in relation to ideas, it suffers from certain handicaps when viewed in the context of realities….." It is wrong to be abrupt in pointing out the error of the interviewers. The candidate must know that the interviewers may be genuinely mistaken or they may pretend to be ignorant or half-informed in a bid to discover candidate's knowledge. A candidate should never say, "You are wrong Sir ...." or "That is not correct ...." or "That is an absolute point of view" or "What you say is unrealistic".

The smiling face: The candidate must endeavour to create an atmosphere of happiness and joy at the time of his interview. This would help him to relax, to avoid being rigid and stiff and bring out the best in him. A smiling face is the surest guarantee to success in all dealings of life. In an interview, one must attempt to produce an impression of happiness, confidence and colourful liveliness.

THINGS THAT MUST DO BEFORE INTERVIEW

Imagine the Interview:

Here the objective is to prepare oneself for the atmosphere that you would face in the interview hall. You have prepare for an interview brilliantly but once you reach the interview venue and you see scores for people already present there it could be nerve racking. But if you imagine this situation a day prior to an interview then it is as if you were expecting this and that's what is happening so there's nothing out of the unusual. You walk in confidently and seeing such a confident person in you some other people might feel uncomfortable.

Dress Appropriately:

Who said looks do not matter, well they do and a lot. No one wants a shabbily dressed person working in the office it just brings bad taste and you could be the one who's never asked for a cup of coffee. Do not wear a t-shirt even; you can wear a stripes office wear shirt and a neat trouser. Your appearance must be of a polished person, donning a professional & conservative look would be really cool.

Sleep Well:

You should take rest a day before the interview. Once you are sure that you have prepared confidently and you have reviewed your curriculum vitae then a good night's sleep can do a world of good for you. If you cannot get a good sleep next morning you will definitely feel lethargic and might have to take aspirin to feel good. A good night's sleep will ensure you are feeling good about everything the next morning and you will have all the energy and confidence to face the interview.

Work on Your Communication Skills:

While content and prior knowledge of the topic shall make sure that you have the material to make a point, communication skills refer to how you make it. Do you put across your views effectively so that others are forced to listen? Or so you merely present them in an unstructured, jumbled type of manner so that some of the other participants struggle to grasp what point you are making? This is where communication skills play a role.

Listening Skills:

Listening skills are crucial. You must appear (and actually be!) attentive to the points that others are making during the course of the Group Discussion. Leaning slightly forwards and nodding your head ever so slightly might be good strategies. This indicates to the evaluators that you are paying attention and are an 'active participant' even while not actually speaking.

****

DRESS WHEN INTERVIEWING

According to Kim Zoller, 55% of another person's perception of you is based on how you look. Her Dressing for Success Information gives some tips on how to look your best, without necessarily spending a lot of money. Here's a quick look at the basics:

Women's Interview Attire:

- (i) Solid color, conservative suit
- (ii) Moderate shoes
- (iii) Limited Jewellery
- (iv) Neat, professional hairstyle
- (v) Tan or light hosiery
- (vi) Sparse make-up & perfume
- (vii) Manicured nails

Men's Interview Attire:

- (viii) Solid color, conservative suit
- (ix) White long sleeve shirt
- (x) Conservative tie
- (xi) Dark socks, professional shoes
- (xii) Neat, professional hairstyle
- (xiii) Go easy on the aftershave
- (xiv) Neatly trimmed nails

Body Language in Interview:

Try these body language tips during your interview:

Use a firm handshake:

In the mind of most people, weak and limp handshakes equal weak character. Be sure you deliver your handshake with a firm grip while looking them right in the eye.

Watch your posture:

There is a definitive difference between a confident posture and a posture that communicates low self-esteem. The best advice is the same your mother gave you, sit up straight with your feet firmly planted on the floor. Again, slumping equals low self-esteem or even disinterest.

Make eye contact:

Regular, strong eye contact is associated with confidence, honesty and boldness. Making eye contact is vital.

Monitor your vocal delivery:

Experts estimate up to 38% of our communication is conveyed by our voice and vocal qualities, which means you need to pay attention not only to what you say but also how you say it. When we're nervous we tend to speak faster and at a higher pitch, which robs of our authority. Take a tip from the acting profession and practice speaking slowly and deliberately.

Pay attention to the interviewer's body language:

In today's competitive job market being qualified for the job and having strong references is not enough. You need to convince the interviewer that you'll be a good fit for the forces and its values. You do this by reading the interviewer's body language and responding appropriately. You need to show the proper amount of "social intelligence" and awareness to stand out from the other interviewees competing with you for the job.

Eye contact is one of the most important aspects of dealing with others, especially people we've just met. Maintaining good eye contact shows respect and interest in what they have to say. By doing this, you won't make the other people feel self-conscious, like they've got a bit of vegetable stuck between their teeth or a dew drop hanging from the nose. Instead, it will give them a feeling of comfort and genuine warmth in your company, any more eye contact than this and you can be too intense, any less and you give off a signal that you are lacking interest in them or their conversation.

Head position is a great one to play around with, with yourself and others. When you want to feel confident and self-assured keep your head level both horizontally and vertically. You can also use this straight head position when you want to be authoritative and what you're saying to be taken seriously. Conversely, when you want to be friendly and in the listening, receptive mode, tilt your head just a little to one side or other. You can shift the tilt from left to right at different points in the conversation.

Arms give away the clues as to how open and receptive we are to everyone we meet and interact with, so keep your arms out to the side of your body or behind your back. This shows you are not scared to take on whatever comes your way and you meet things "full frontal". In general terms, the more outgoing you are as a person, the more you tend to use your arms with big movements. The quieter you are the less you move your arms away from your body. So, try to strike a natural balance and keep your arm movements midway.

Legs are the furthest point away from the brain, consequently they're the hardest bits of our bodies to consciously control. They tend move around a lot more than normal when we are nervous, stressed or being deceptive. So, best to keep them as still as possible in most situations, especially at interviews or work meetings. Be careful too in the way you cross your legs.

Mouth movements can give away all sorts of clues. We purse our lips and sometimes twist them to the side when we're thinking. Another occasion we might use this movement is to hold back an angry comment we don't wish to reveal. Nevertheless, it will probably be spotted by other people and although they may not know the comment, they will get a feeling you were not to pleased. There are also different types of smiles and each gives off a corresponding feeling to its recipient.

Create A Favourable First Impression in Interview:

The way to create a favourable first impression is to be sure you appear confident and open. When you meet your interviewer for the first time, make eye-contact at the introduction and repeat the interviewer's name as you shake hands and thank them for inviting you to the interview.

What often follows is the invitation to 'tell them about yourself' which allows you to commence your self-introduction that is so important to your interview success. This is the phase where you develop the report that will carry you through to the positive outcome at the end of the interview.

Because self-introduction is your key to interview success, you must have previously prepared exactly what you are going to say. This is not some lengthy story about your life, but a short focused statement that sounds interesting to the listener.

Strengths and Achievements:

In your self-introduction, you will include some examples of your strengths and achievements which relate directly to the requirements of the job. This must also demonstrate your personal qualities that you apply when you are doing the job because the type of person you are is often far more important then just having the ability to do a job.

The way you outline your self-introduction, in particular the way you speak, tells the interviewer whether you are confident in your abilities so you must rehearse it well, but don't try to be what you are clearly not – you'll only be found out at a later date. Get a friend to listen to your self-introduction with a critical ear, because if it sounds false it will set the alarm bells ringing with the interviewer who will detect that it is not the real you and destroy the rapport you were building up. Practice speaking faster or more slowly, louder or quietly and try to vary it throughout.

When you have prepared your self-introduction, ask yourself this question: 'What does the interviewer need?'

Prepared well, this self-introduction is your key to interview success because it helps to create that all-important first impression, helps you to build the rapport with the interviewer and satisfies the questions about whether you are the sort of person who will fit in to the organization successfully.

Do's and Don'ts of Interview:

Do's:

(i) When instructed to, you will knock on the door, wait until you are told to "Come In" proceed to the chair in front of the board and be seated.

(ii) You have to observe officers in the department in which you are testing.

(iii) Be Positive. When you are relaxed and confident, you will be able to focus more on the questions and your instincts than on being self-conscious. Knowledge breeds confidence.

(iv) Give the interviewer a firm handshake, even if the interviewer is a woman and you are a man. Nobody likes a limp handshake but by the same token do not take the person's hand off either.

(v) Eye contact shows your confidence. Do not stare out of the window or fiddle with your pencil. The interviewer is talking to you or you to him. Be attentive.

(vi) If the interviewer makes a joke, smile to acknowledge that he made one, even if it was not funny.

(vii) Make sure you have understood the question. If you do not, ask him to clarify it.

Don'ts:

(viii) Don't chew gum during the interview.

(ix) Don't discuss personal problems.

(x) Do not smoke, even if the interviewer does and offers you a cigarette.

(xi) Don't interrupt when the interviewer is talking.

(xii) Don't address the interviewer by his/her first name unless invited to do so.

(xiii) Don't speak or act in a nervous manner.

Don't:

1. Rub the back of your head or neck. Even if you really do just have a cramp in your neck, these gestures make you look disinterested.
2. Rub or touch your nose. This suggests that you're not being completely honest, and it's gross.

3. Sit with your arms folded across your chest. You'll appear unfriendly and disengaged.
4. Cross your legs and idly shake one over the other. It's distracting and shows how uncomfortable you are.
5. Lean your body towards the door. You'll appear ready to make a mad dash for the door.
6. Slouch back in your seat. This will make you appear disinterested and unprepared.
7. Stare back blankly. This is a look people naturally adapt when they are trying to distance themselves.

Do:

8. Sit up straight, and lean slightly forward in your chair. In addition to projecting interest and engagement in the interaction, aligning your body's position to that of the interviewer's shows admiration and agreement.
9. Show your enthusiasm by keeping an interested expression. Nod and make positive gestures in moderation to avoid looking like a bobblehead.
10. Establish a comfortable amount of personal space between you and the interviewer.
11. If you have more than one person interviewing you at once, make sure you briefly address both people with your gaze (without looking like a tennis spectator) and return your attention to the person who has asked you a question.
12. Interruptions can happen. If they do, refrain from staring at your interviewer while they address their immediate business and motion your willingness to leave if they need privacy.
13. Stand up and smile even if you are on a phone interview. Standing increases your level of alertness and allows you to become more engaged in the conversation.

SOME TIPS TO GET WELL IN INTERVIEW

Here are some tips that must be followed during the course of interview:

1. Preparing For The Interview:

Before going to the interview, make sure you have accurately completed all of the paperwork. The interviews will be reviewing the information you have listed. It looks better if you type all of the information.

You should review the questions you believe you will be asked as well as your answers to those questions. You want to look your best and sound your best.

2. Physical Fitness:

Physical fitness is very important in military so you must pass the physical agility test to move forward in the selection process. The combination of running, push-up and sit-ups are the best way to prepare for the test.

3. Be In Time:

Arrive there about 15 minutes early. It shows your regard for the interviewer's time. If you have to wait, use the time to go over your notes.

4. Looking You Best:

The most interviewers will expect a man to wear a suit and tie, and a woman to wear a dress or a business suit to the interview. Most of the time, an interviewing panel is prohibited from disqualifying an applicant based on what he or she is wearing. You want to project a professional image. You want to show the panel that you are a confident person.

5. Be Enthusiastic, But Be Sincere:

Be confident in your capabilities and show that you are interested in joining their department.

6. Be Honest:

Honesty and integrity are the main qualities to becoming a police officer. If you do not already possess these qualities, do not bother applying.

7. Don't Cross Your Arms Or Legs:

You have probably already heard you shouldn't cross your arms as it might make you seem defensive or guarded. This goes for your legs too. Keep your arms and legs open.

8. Have Eye Contact, But Don't Stare:

If there are several people you are talking to, give them all some eye contact to create a better connection and see if they are listening. Keeping too much eye-contact might creep people out. Giving no eye-contact might make you seem insecure. If you are not used to keeping eye-contact it might feel a little hard or scary in the beginning but keep working on it and you'll get used to it.

9. Relax Your Shoulders:

When you feel tense it's easily winds up as tension in your shoulders. They might move up and forward a bit. Try to relax. Try to loosen up by shaking the shoulders a bit and move them back slightly.

10. Lean, But Not Too Much:

If you want to show that you are interested in what someone is saying, lean toward the person talking. If you want to show that you're confident in yourself and relaxed lean back a bit. But don't lean in too much or you might seem needy and desperate for some approval. Or lean back too much or you might seem arrogant and distant.

11. Don't Touch Your Face:

It might make you seem nervous and can be distracting for the listeners or the people in the conversation.

12. Keep You Head Up:

Don't keep your eyes on the ground, it might make you seem insecure and a bit lost. Keep your head up straight and your eyes towards the horizon.

13. Slow Down A Bit:

This goes for many things. Walking slower not only makes you seem more calm and confident, it will also make you feel less stressed. If someone addresses you, don't snap you're neck in their direction, turn it a bit more slowly instead.

14. Don't Fidget:

Try to avoid, phase out or transform fidgety movement and nervous ticks such as shaking your leg or tapping your fingers against the table rapidly. You'll seem nervous and fidgeting can be a distracting when you try to get something across. Declutter your movements if you are all over the place. Try to relax, slow down and focus your movements.

15. Use Your Hands More Confidently:

Instead of fidgeting with your hands and scratching your face use them to communicate what you are trying to say. Use your hands to describe something or to add weight to a point you are trying to make. But don't use them too much or it might become distracting. And don't let your hands flail around, use them with some control.

Positive and Useful Points (In Self-Assessment):

The following points are of utmost importance so far as your self-assessment:

1. Show your skills, potentials and achievements.
2. Co-curricular activities during school or service career.
3. Show your initiative, drive, organising ability, communication ability, energy, sense of responsibilities, skill, resourcefulness, discipline etc. These positive points will go a long way for a successful candidate. Do not expose your failure and disappointment.
4. Maintain and up-to-date scrap-book, giving the undermentioned details:
   (a) Name of school/college (where you studied).
   (b) Examination passed, marks obtained and subjects offered.
   (c) Educational achievement.
   (d) Best subject you excelled.

(e) Co-curricular activities and prizes etc. you won.
(f) Any particular training you received.
(g) Extra skill to your credit.
(h) Work which you found most satisfying.
(i) Any appreciation you received for your performance.
(j) Name the Papers/Magazine/Periodicals you read.
(k) What is your holding?
(l) What is your favourite game?
(m) Your leadership qualities like initiative, drive, stamina etc.
(n) Whether you get well with your colleagues?
(o) Act naturally, by showing artificiality you are creating bad impression in mind of GTO/other candidates.
(p) Don't ever feel nervous/awkward. Behave as if you are genius.
(q) Remember that you are giving 'Best' of yourself, hence present yourself in a confident fashion (but without boasting).

Dress, Appearance, Behaviour and Etiquettes:

1. Dress of a person is certainly a pointer to his personality. Your dress should be properly fitted and nicely pressed. Hair should be cut. Clothes need not be gaudy and expensive. Your shoes be polished and cleaned.
2. Before entering the interview room just knock at the door. When called-in, greet the interviewing officer. Don't offer your hand for handshake.
3. Don't take seat unless you are asked by the officer and thank him after taking seat.
4. Be natural and set-comfortably and need not be stiff.
5. When asked a question by the Presiding Officer, pause for a while, think out answer and then reply.
6. If you have not understood the question get it clarified.
7. Your speech should be natural (neither loud and not slow). Speak clearly and confidently.
8. Give due respect to interviewing officer. Be polite and clear in your language.
9. Your answers should be brief and to the point.
10. Be careful about your mannerism. Don't fiddle with any part of your body.
11. Don't bluff the Presiding Officer. You should be straight forward and truthful. If you don't know the answer, say, 'sorry sir, I don't know'.

12. If you make false statement or apply 'fluke', you lose your point.
13. Don't get irritated or become arrogant. Give answer politely. Remain cool.
14. Behave nicely and don't be assertive. Don't bear gloomy/serious look, while being interviewed. Always have a smiling face.
15. After interview is finished say thanks and good-bye and then leave the room, keeping the chair in right place.

Aim of an Interview:

Aim of an interview is to create an opportunity for meeting and talking with each-other, on matters of mutual interest. Interviewer and interviewee are real participants in an interview, former asks questions relating to political, social economical, cultural and aesthetical spheres. A successful interview cannot be a one way traffic. It is an occasion for discussion.

Interview does not end with your selection process. It continues throughout your career; whether in official capacity or in your social life. Try to influence others with your strong ponit.

Most Important Questions (Asked By Interviewer):

1. Name of schools/colleges you studied
2. Subjects you studied
3. Your educational achievements
4. Your most favourite/least favourable subjects
5. Reason for choosing particular course of study
6. Training, if any you have undertaken
7. Tell something about yourself
   (a) Your strong points
   (b) Your weakness
7. Family background
8. What is your hobby?
9. Leisure activities
10. Name of newspapers/periodicals/magazines etc. you read
11. Name of TV programme you like most
12. Whether you held any appointment in your school/college time
13. What do you feel, if any responsibility devolves upon you?
14. What do you enjoy most?
15. Your greatest achievement in life

16. Whether you worked with computers?
17. Whether you displayed any drive and initiative? If so, explain.
18. Whether you got ability to adjust and get along well with people of different tastes?
19. Whether your present job gives you satisfaction?
20. Explain your working experience
21. Why do you think you are better than others?
22. How do you get on with superior?
23. How do you get on with your junior?
24. Your failure in any walk of life
25. Your happiest day in life
26. Your saddest day in life
27. Your adventurous day in life
28. Your funniest day in life
29. The most memorable event in your life
30. In matter of money and power; which one of the two you prefer and why?
31. Type of people you like to mix-up
32. How do you justify that you are a competent person (for the job you applied for)?
33. Name of the places of interest you have visited?
34. Whether you are ambitious or otherwise?
35. Place where you were born?
36. Name of machineries, tools, equipments you are familiar with
37. Why do you join Defence Forces?
38. Describe any events where you showed act of bravery?
39. Tell something about your social, cultural, economical and educational status.
40. What are your ambition in life?

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SUBJECTS FOR INTERVIEW

Usually, the subjects for interview are:

- (i) **Indo-Pak History.**
- (ii) **Mathematics**
- (iii) **Geography.**
- (iv) **Physics.**
- (v) **Chemistry.**
- (vi) **General Knowledge.**
- (vii) **Current Affairs.**

Indo-Pak History.

The syllabus of Indo-Pak History include broad outlines of Indo-Pak History, main events leading to the national independence of Pakistan, knowledge of Pakistan's ancient Islamic Culture as displayed by ancient buildings, monuments, masterpieces of culture, promotion of self-government, etc.

World History.

It includes elementary information of main events in the world history, national movements and reforms in the world such as: the Industrial Revolution in Britain, French Revolution, the Foundation of Soviet Russia, American War of Independence, World Wars, the Modern Freedom Movement of Asia, etc.

Geography.

The course of geography includes: shape and movement of the earth; seasons of the year, day and night; climate and weather; volcanoes, earthquakes; ocean currents and tides; human occupations and activities pertaining to geographical factors. Geography of Pakistan with particular reference to the above categories.

Physics.

The subjects of Physics contain:

Physical properties, states of matter and simple measurements of mass, density, gravity and weight; motion of object, acceleration, force, gravity and velocity; effect of heat, transference of heat, change of state, measurement of temperature; rectilinear propagation of light, phenomena of reflection and refraction; properties of a magnet, natural and artificial magnets; electricity...static and current, conductors and non-conductors, magnetic effects of currents, lighting, etc.

Chemistry.

It includes:

Physical and chemical changes, mixture and compounds, elements; chemical composition of water; chemical properties of air; acids, bases and salts, carbon, coal and carbondioxide; preparation of properties of oxygen, hydrogen and nitrogen, etc.

General Knowledge.

It comprises:

Elementary information about human body and its main organs. Names and advantages

of the common animals, birds, trees, plants, flowers and minerals; famous scientists and their inventions.

Current Affairs.

It includes:

Important events which occurred in Pakistan during the last two years; Pakistan's foreign policy; important personalities of Pakistan; world events gaining international importance, famous personalities of the world; foreign sports and other important cultural activities, etc.

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SPECIMEN INTERVIEWS

Specimen Preliminary Interview No. 1

Candidate. *Assalam-o-Alaikum.*

Chairman. *Wa Alaikum-us-Salam.* Please take your seat.

Candidate. Thank you, sir.

Chairman. What are the categories of modern war?

Candidate. Sir, the categories of the modern war are: total war, limited war, local war, cold war, etc.

First Member. Will you please furnish some elaboration on "total war"?

Candidate. Sir, the total war denotes the carrying on of conflict with all the resources and all the weapons of mass destruction without any limitation to its nature and geography. No distinction is made between the military and civil population. There is seldom any respect for the rights of neutrals, morals or human rights, etc. Such a war, usually, engulfs the entire world and develops into a global war.

Second Member. Will you please give some detail on "limited war"?

Candidate. Sir, the limited war is restricted in many ways. It may be limited in its means of objects and location. It represents a war in which weapons of war or destruction are not used against the home front. In this category, there may be restriction on the means of fighting, but locality is not limited.

Third Member. What is "cold war"?

Candidate. Sir, cold war is mainly a political rather than a military affair. It precedes a formal declaration of war. It refers to a condition of international dispute somewhere between negotiation and war itself. It is, in fact, a dangerous situation where relations among nations have become strained and the next step in the worsening plight can lead to armed war. The participant nations in the cold

war are, indeed, in political and economic conflict except by the exercise of mutual restraint, total war has not ensued. It is with all possible means, short of war conflict except by the exercise of mutual restraint, total war by which a country aims at uprooting the existing balance of power. It makes utmost attempts to weaken the enemy by winning over his possible allies, overthrowing constitutional authority through subversion and infiltration, confusing his beliefs and undermining his economy. The cold war, on account of division of the world in two blocs, following divergent policies, has acquired a worldwide range. Each bloc is seeking to reach, before war becomes inevitable, such a position that it can be won with the minimum period of fighting.

Third Member. Please tell us, also, about "hot war"?

Candidate. Sir, at a time when a country finds it difficult to settle an international dispute, then it starts a conflict to solve that issue which is called "hot war" or a "shooting war".

Chairman. That will do, please.

Candidate. Thank you, sir, *Assalam-o-Alaikum.*

Chairman. *Wa Alaikum-us-Salam.*

Specimen Preliminary Interview No. 2

Interviewee. *Assalam-o-Alaikum.*

Chairman. (and Members of the Board) Wa Alaikum-us-Salam.

Chairman. Please take your seat.

Interviewee. Thank you, Sir.

Chairman. Will you please tell us something about the Warsaw Pact?

Interviewee. Sir, this treaty was signed at Warsaw, Poland in May 1955 by Russia, Bulgaria, Czechoslovakia, Hungary, East Germany, Albania, Poland and Rumania. Each country promised to assist the other by all means in case of an attack. This alliance of Communist countries was as a countermeasure against NATO and Western European Union.

First Member. What do you know about Outer Space Treaty?

Interviewee. Sir, the Outer Space Treaty was unanimously approved by the

United Nations General Assembly on December 19, 1966. It is the first international treaty governing space exploration.

First Member. What do you know about the Durand Line?

Interviewee. Sir, the Durand Line was drawn by Sir Mortimer Durand in 1893, as an international boundary line between Pakistan and Afghanistan.

Second Member. Will you, please, throw some light on Vietcong?

Interviewee. Sir, Vietcong or Viet Cong or National Liberation Front (NLF) is Vietnamese Communists. It was established in South Vietnam in 1960. It claims that it controls most of the country. The aims of this organisation are:

(i) Withdrawal of American forces from South Vietnam.
(ii) Free Elections in the whole of Vietnam.
(iii) Negotiations between South Vietnamese of all political activities without foreign hand.

Third Member. Which game do you play?

Interviewee. Sir, I play hockey.

Third Member. Why do you prefer to play this game?

Interviewee. Sir, this game allows chance for all members of a team to play at a time. It also promotes health.

Third Member. How many players can take part in this game?

Interviewee. Sir, eleven players take part in this game.

Third Member. Please tell us what positions are taken by the eleven players in hockey?

Interviewee. Sir, in this game, there are five forward players, 3 half-back players, 2 full-back players and a goalkeeper.

Chairman. That will do.

Interviewee. Thank you, sir, *Assalam-o-Alaikum.*

Chairman. *Wa Alaikum-us-Salam.*

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Specimen Preliminary Interview No. 3

Interviewee. *Asslam-o-Alaikum.*

Chairman and Members of the Board. *Wa Alaikum-us-Salam.*

Chairman. Please sit down.

Interviewee. Thank you, sir.

Chairman. Mr. Muhammad Jamil (name of the interviewee), please tell us about the origin and significance of the name of "Pakistan".

Interviewee. Sir, Pakistan, by Allah's grace, achieved existence on August 14, 1947, by way of transfer of power by the British Government to the people of the Sub-continent. The division of the Sub-continent became inevitable in the face of the pressure of the Muslim population to have a country of their own where, it was felt, their religion, culture, mode of life as well as participation in politics, industry and trade, would be secure.

The differences between the two main principal religious communities of the Sub-continent, the Muslim and the Hindu, had taken clear shape, in the context of the inevitable movement towards the transfer of power, by the time their leaders met the British Government in London at the Round Table Conference, during the early thirtees.

The name "Pakistan" was first used by Chaudhry Rahmat Ali, a student, in a pamphlet published in London in the early thirties. The concept of a homeland for Indian Muslims was put forward by Allama Iqbal in his presidential address at the Allahabad session of the All-India Muslim League in 1930. A session of the Muslim League was held in March 1940 at Lahore, where the potentious Resolution demanding a separate "homeland" was passed. The Resolution was moved on March 23, by Maulvi Fazl-ul-Haq and seconded by Ch. Khaliq-uz-Zaman, Nawab Bahadur Yar Jung and one representative from each province. The Resolution was finally adopted at the night session on March 24, 1940.

The ambition of the Muslim nation was realized, seven years later, on August 14, 1947, when the Quaid-eAzam, Muhammad Ali Jinnah (Allah may show His mercy upon him) became the first Governor-General of the new State of Pakistan.

In the name "Pakistan", the word 'P' stands for the Punjab, 'A' for Afghan (i.e. Pathan, for North-West Frontier Province), 'K' for Kashmir, 'S' for Sindh and 'Tan' for Baluchistan.

Chairman. Please describe Pakistan's central importance in the Muslim world.

Interviewee. Sir, Pakistan maintains an important position in the world and in the Muslim world in particular. It is connected with the Muslim countries of South-West Asia, which are often linked together under the title of the Middle East countries. They are all rich in oil. The Arab countries of North Africa are situated to further westward. Thus, there is, by Allah's grace, one unbreakable chain of Muslim countries, which have got great agricultural and mineral resources. The Muslim States of Indonesia and Malaysia also lie in line with Pakistan. Thus, Pakistan is unique in many ways. It commands a central importance in the Muslim world.

First Member. Is Islam the cementing factor for Pakistanis?

Interviewee. Yes sir, Islam is the cementing factor for Pakistanis. The ex-President of Pakistan, Field Marshal Muhammad Ayub Khan, while addressing the diamond jubilee session of the Anjuman-e-Himayat-e-Islam at Lahore on March 26, 1967 had said that you should exist your life according to Quran and making them the guiding principles of practical life. Islamic history should also be studied in its true perspective and a leaf should be taken from the events of the past.

The ex-President said that for more than the people of other Muslim countries, Pakistan needed the Islamic teachings most, because people in other Muslim countries shared the ties of language and race, but in Pakistan Islam was the greatest cementing factor among its people. The only way to serve Islam and to preserve nationalism was to search the right path through the guidance of the Quran.

Second Member. What is the main source of income of Pakistan?

Interviewee. Sir, the main source of income of Pakistan is agriculture. The occupation of agriculture in Pakistan stretches as far back as the pre-historic times. Even at present, it meets the main needs of the people's livelihood. It also accounts for the main source of the country's economy. Again, it is the source of raw materials for her principal industries. Approximately 95% of her exports are the products of arable and pastoral farming. More than 60% of Pakistan's income is due to agriculture.

Third Member. What do you know about the mineral resources of Pakistan?

Interviewee. Sir, Pakistan though deficient in minerals, but all the same, has been much alive to the importance of minerals in the development of the country. Valuable reports and maps were being published as a result of the Geological Survey of Pakistan. Foreign geological experts' help was also sought for the geological exploration and seeking to tap the mineral wealth of the country. Iron, coal, mineral oil, natural gas, chromite, rock salt, gypsum, limestone, etc. are the minerals which are most vital to the economy of Pakistan.

Chairman. That is all.

Interviewee. Thank you, sir, *Assalam-o-Alaikum.*

Chairman and Members of the Board. *Wa Alaikum-us-Salam.*

Specimen Preliminary Interview No. 4

Interview. *Assalam-o-Alaikum.*

Chairman and Members of the Board. *Wa Alaikum-us-Salam.*

Chairman. What is the meaning of guerilla warfare?

Interviewee. Sir, the word guerilla (Spanish) is derived from guerra which means "war". The "guerilla warfare" means "a mode of harassing an enemy by small band." A member of such a band is called "guerilla". "Guerilla warfare," thus is "an irregular war waged independently by small bodies. At present, this term is used to represent a method of conducting war by employing bands living in an area occupied by enemy. Guerilla warfare, unlike regular warfare, which is the concern of the armed forces, is carried on by fighters who may be either private citizens or regular soldiers cut off from their main force.

Chairman. Does Islam allow guerilla warfare?

Interviewee. Yes sir, Islam recommends guerilla warfare. It is Islam that has originated this system of war. The Quran in 4:71 reads thus, "O you who believe! take your precautions; then either go forth in separate (guerilla) parties or go forth all together." Guerilla warfare is not new in the history of war. But it is only in modern time that the value of this system of warfare has been fully realised. Guerilla operations have become an essential accompaniment of regular warfare.

First Member. Can be support of the civilian people make the guerilla warfare successful?

Interviewee. Yes, sir, the support of the civilian people makes the guerilla warefare successful. There must also be good leadership, a strong will to resist, a willingness to endure great obstacles and favourable terrain.

Second Member. What are aims of the guerilla warfare?

Interviewee. Sir, the aim of the guerilla warfare is to exhaust the fighting strength of the enemy. The guerillas are sometimes compared to innumerable gnats which by biting a giant both in front and in rear ultimately exhaust him. By inflicting heavy damage on the enemy, guerillas succeed in diverting his attention from the main target. Guerillas undertake their operations to harass the enemy and they make the task of occupation almost impossible for him.

Second Member. Will you please let us know the main functions of guerillas?

Interviewee. Sir, the main functions of the guerillas are: to disrupt the lines of communications, to raid isolated enemy installations; to

disturb water and electric supply, to make surprise attacks on enemy headquarters, artillery positions, etc; to raid isolated army units for food, clothing, weapons, ammunition, etc; to provide brief information about the various activities of the enemy, etc.

Second Member. What are the characteristics of guerilla warfare?

Interviewee. Sir, the characteristics of guerilla warfare are: to avoid pitched battle as they admit the superior strength and better supply system of the enemy; to endeavour to obtain local numerical superiority and bring only those objects under their operations which are within their means. They understand that they have to conduct a war of movement. The guerillas, usually, depend on local inhabitants for their food, water, and other minor requirements. They capture arms, ammunitions, explosives and other necessary materials from the enemy. They also get their arms from friendly and sympathetic powers.

Third Member. Where do the guerillas keep their bases of operations?

Interviewee. Sir, the bases of the guerillas represent the place from which they conduct their operations and from which they receive orders. They are a sort of headquarters of the guerilla strength. The bases most favourable for the conduct of guerilla warfare are mountains or flat well-covered with jungle or swamp.

Third Member. Can you, please, describe the tactics of the guerillas?

Interviewee. Sir, being weak in their resources, guerillas always avoid major confrontation with the well-equipped enemy. Their purpose is not to defeat the enemy in battle but only to cause him maximum damage and to harass him in a continuous manner. Thus, the mottos of guerillas are "to hit and run". Speed and surprise are obviously of utmost importance for them. For surprising the enemy, the guerillas must be in a position to have as complete information as possible about the plans of the enemy, his main power and shortcomings, the location of his headquarters, installations and supply dumps so that their own plan can be operated in quite a sound position; to ensure their own plan of action and movement is a guarded secret, to operate upon such a time when the enemy expects them the least; to alter their methods of operation frequently so that the enemy may not get used to them.

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